MARKETING FARM PRODUCTS

By GEOFFREY S. SHEPHERD

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MARKETING
FARM PRODUCTS

"Marketing is the crux of the whole food and agriculture problem. It would be useless to increase the output of food, it would be equally futile to set up optimum standards of nutrition, unless means could be found to move the food from the producer to the consumer at a price which represents a fair remuneration to the producer and is within the consumer's ability to pay."

"Food and Agriculture Organization of the United Nations," *Report of the First Session of the Conference,* held at the City of Quebec, Canada, October 16, to November 1, 1945, p. 37.

MARKETING FARM PRODUCTS

By GEOFFREY S. SHEPHERD

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Author of *Agricultural Price Control* (1945)

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TO

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Preface

Striking evolutionary changes have been taking place in agricultural marketing during the last 10 or 20 years: Developments in transportation, communication, market organization, refrigeration, packaging, large-scale purchasing, governmental regulation, and state and federal price controls have made many long-established practices obsolete. New practices are being worked out to take the place of the old. The purpose of this book is to present and analyze the new marketing developments in a systematic way, to show what they mean in economic terms, and to show how producers and consumers can make the best use of the opportunities which these new developments create.

Marketing the food and fiber of the nation is a big job. Agriculture's marketing problems can best be appraised by seeing first what the marketing job is as a whole, and how well or poorly it is being done. Then the different marketing problems confronting the nation's six million farmers can be considered as parts of the whole.

This broad approach is fruitful because any individual farmer can do his marketing job better if he knows the whole marketing problem as well as his local problems. It is useful also because some of his marketing problems cannot be solved by individual action alone. An individual farmer, for example, cannot reduce his marketing costs by reducing transportation rates, improving processing methods, or reorganizing central markets. Most problems of that sort require group action for their solution.

The book is divided into three parts.

Part I starts with a broad outline of the agricultural production and marketing job in the United States as a whole. It shows the size of the job, the way it is being handled so far, and some of the problem areas. The characteristics of agricultural supply and demand are next presented. Then comes an analysis of recent changes in the agricultural marketing plant. This analysis covers changes both in the layout of the physical marketing system that gets farm products distributed from the producer to the consumer, and in the economic price-determining system that regulates agricultural production, distribution, and consumption.

Part II deals with the individual farmer's problems of producing the goods that are most in demand, and selling them to advantage in the varying-price environment that confronts farmers today. These problems are primarily price problems. They involve both group and individual action—group action by which farmers as a group try to control the prices of their products, and individual action by which individual farmers adapt their production and marketing to the controlled or uncontrolled movements of prices. The control of prices by group action is a study in itself, and is treated in another book. Here we confine our attention to individual farmer adaptation to prices.

Part III deals with marketing costs—what they are, and how they can be reduced. Most of these cost problems involve group action. They differ from product to product, for most of the way through the marketing system, different farm products are handled in specialized markets and processing plants; livestock is sold through livestock markets and processed in meat packing plants; grain is sold in grain markets and milled in flour mills, etc. Accordingly, the problems of marketing costs are handled separately on a commodity basis, one chapter to each product, so far as space permits.

Farther along in the marketing system, farm products cease to be handled in separate commodity markets. The retail store handles all food in the same store. The last chapter or two therefore departs from the commodity basis and deals with wholesale and retail food distribution as a problem in itself, covering all food products.

This book is the second in a series of three books (*Agricultural Price Control,* 1945, was the first) replacing *Agricultural Price Analysis,* 1941, which is now out of print.

I am indebted to a number of my colleagues at Ames for help in the preparation of the material in this book. The chapter on grain marketing methods and costs is based upon an extensive research project conducted by R. C. Bentley and myself. A. Mathis dug up the material for the chapter on milk marketing costs; F. R. Robotka gave valuable counsel on agricultural cooperation; and so did I. W. Arthur and S. H. Thompson, on livestock marketing. I also am indebted to W. W. Cochrane, F. L. Thomsen, R. O. Been, Frederick V. Waugh, W. C. Crow, L. D. Howell, and J. W. Wright, of the United States Department of Agriculture.

G. S. S.

Ames, Iowa
April, 1946

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PART I

THE PHYSICAL PRODUCTION AND DISTRIBUTIVE PLANT

CHAPTER 1

Development of Geographical Specialization

Toward the end of the eighteenth century the famous French gourmand, Jean Anthelme Brillat-Savarin, spent some time in the United States. In his *Physiology of Taste* (Meditation VI, No. 38) he described an excellent meal he had had with a Connecticut farmer in 1794. It consisted, said Brillat-Savarin, of a superb piece of corned beef, a stewed goose, a magnificent leg of mutton, vegetables of every description, and huge mugs of cider at each end of the table. After the meal the farmer addressed his guest as follows:

"You behold in me, my dear sir, a happy man, if there is one on earth; everything you see around you, and what you have seen at my house, is produced on my farm. These stockings have been knitted by my daughters; my shoes and my clothes come from my herds; they, with my garden and my farmyard, supply me with plain and substantial food. The greatest praise of our government is that in Connecticut there are thousands of farmers quite as content as myself, and whose doors, like mine, are never locked.

"Taxes here scarcely amount to anything, and, as long as they are paid, we can sleep calmly. Congress favours in every possible way our rising industry; agents from every quarter are always ready to rid us of all that we have to sell; and I have ready-money in hand for a long time, having just sold at twenty-four dollars the barrel of flour for which I usually get eight.[1]"

The peace and stability of self-sufficient agriculture portrayed in this quotation have long since receded into the background of history. As developments in transportation and communication opened up the country during the nineteenth century, self-sufficiency gave way to specialization and commercialization, in agriculture as well as in manufacturing and trade.

By 1870, about 75 years after Brillat-Savarin wrote about the self-sufficient farmer, agriculture was half commercialized; only 50 per cent of the total workers (persons 10 years or over) in the United States were engaged in farming. By 1940, the percentage had dropped to less than 20.[2] Thus today, less than one-fifth of the working population of the United States is needed to produce all the food and fiber that the whole nation uses; the other four-fifths is free to make the other things and render the other services which together with a liberal supply of food and fiber make up a high standard of living.

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[1] Quoted in *Agricultural History Series No. 2*, "Some Landmarks in the History of the Department of Agriculture," BAE, USDA, January, 1942, processed.

[2] *U. S. Bureau of the Census, Population Sixteenth Census of the U. S.*: 1940. Series P-9, No. 11, December 8, 1944, and U. S. Census, 1940, Series P-44, No. 21.

AGRICULTURE HAS BECOME COMMERCIALIZED

Farmers were not entirely self-sufficient even in 1794. Part of the satisfaction expressed in the quotation above arose from the fact that the farmer had just sold a barrel of flour for three times its normal price. Farmers even then were partly dependent upon the outside market. Today, of course, agriculture in the United States has lost most of its early self-sufficient character. Agriculture today is mainly commercialized—dependent upon the sale of its products.

The extent of agriculture's dependence upon the market can be shown in statistical terms. On the average from 1935 to 1939 just before World War II, the total agricultural cash income from marketings (from farm products sold by farmers) was 8 billion dollars a year. In 1940, the last representative pre-war year for the United States, it was 8.3 billion dollars. Government payments to farmers were 0.8 billion, and the net income from non-agricultural sources, 2.4 billion. The value of the farm products consumed on farms was only 1.2 billion, and the rental value of farm homes was 0.6 billion. Agriculture in the United States in 1940, therefore, was only $\frac{(1.2 + 0.6)\,100}{8.3 + 0.8 + 2.4} = 15.7$ per cent self-sufficing. It depended upon sales in the market, and government payments, for 84.3 per cent of its income.[3]

Thus farmers in modern times are dependent upon conditions outside their fences for nearly 85 per cent of their income. No longer can each farmer go his own way, as if he were independent of the others and of the rest of the world. That was all right in 1794; a farmer then was as independent as he felt. But today he is so much affected by the forces at work outside of his farm that he needs to study them as much as he studies the natural and biological forces at work on his own farm.

These outside forces are primarily economic in character, and they create economic problems that are not so easy to solve as the physical problems of production. These economic problems often are bewildering and perverse. In 1794, abundant production was the occasion for thanksgiving; today it is regarded more as a burden than as a blessing. Even in the middle of World War II, in 1944, when the demand for farm products was literally insatiable, a responsible farm magazine editor wrote, under the heading "Surplus Trouble on the Way": "Cotton is one example [of surplus trouble]. We have 11,700,000 bales on hand—a year's supply. And a new crop, *fortunately* a little under average, is coming on."[4] Fair is foul, and foul is fair, in many of these economic problems.

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[3] *Net Farm Income and Parity Report: 1943 and Summary for 1910-42,* BAE, USDA, July, 1944, p. 4.

AGRICULTURE HAS BECOME SPECIALIZED WITHIN ITSELF

Agriculture has not only become commercialized; it has become highly specialized within itself. With the passage of time, the production of each farm product gradually has become localized in the areas where it can be produced at the lowest cost. When some new lower-cost area is opened up, its product undersells the product from the previous area; eventually the new area partly or completely replaces the old.

Today, the great staple crops are produced primarily in the specialized areas shown in Figure 1. Greater detail for wheat is given in Figures 41 and 42 in Chapter 16, and for livestock, in Figures 43 to 45 in Chapter 17. Cotton, of course, is grown exclusively in the South. Tobacco, rice, and flax are grown in the limited areas shown in Figure 2. The production of the less important "specialty" crops is still more localized; citrus fruit production is highly concentrated in small areas in California, Florida, Texas, and Arizona, as shown in Figure 3, and shipped thousands of miles across the country to the heavy population areas of the East.

"Any large city in the United States today receives its supply of fruits and vegetables from most of the states and from several foreign countries. Take Philadelphia as an illustration. Philadelphia's supply of fruits and vegetables in 1936 came from 36 states and more than a dozen foreign countries. Out of a total of nearly 70,000 cars received (excluding bananas), California supplied nearly 12,000 cars, which was about 50 per cent more than the number received from Pennsylvania. Receipts from Florida exceeded receipts from Pennsylvania by one-third."[5]

---

[4] *Wallace's Farmer and Iowa Homestead,* Nov. 4, 1944, p. 6. (Italics added.)

[5] W. C. Crow, *Wholesale Markets for Fruits and Vegetables in 40 Cities,* BAE, USDA Cir. 463, p. 5. 1938.

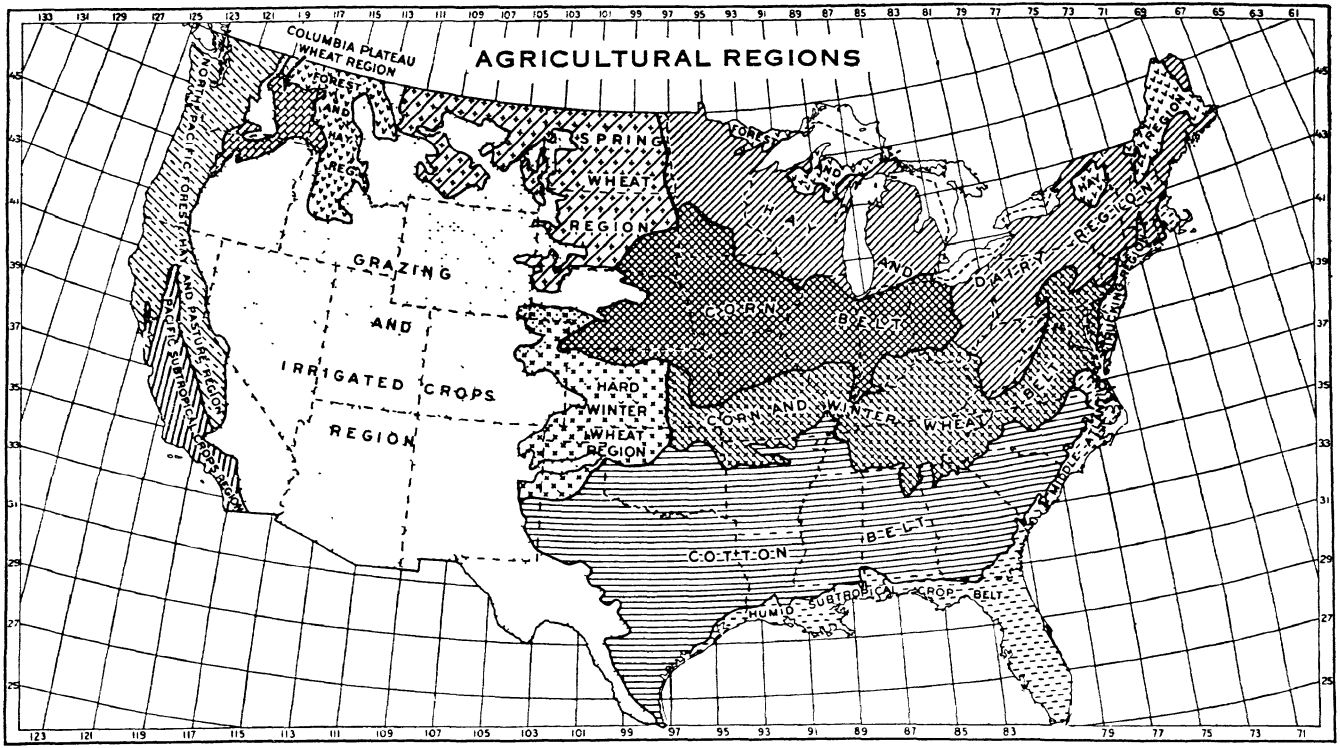
AGRICULTURAL REGIONS
COLUMBIA PLATEAU WHEAT REGION
FOREST AND HAY REG.
NORTH PACIFIC FOREST, HAY AND PASTURE REGION
PACIFIC SUBTROPICAL CROPS REGION
GRAZING AND IRRIGATED CROPS REGION
SPRING WHEAT REGION
HARD WINTER WHEAT REGION
CORN BELT
CORN AND WINTER WHEAT BELT
FOREST AND HAY AND DAIRY REGION
MIDDLE ATLANTIC TRUCKING REGION
COTTON BELT
HUMID SUBTROPICAL CROP BELT

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FIG. 1.—Agricultural Regions of the United States.

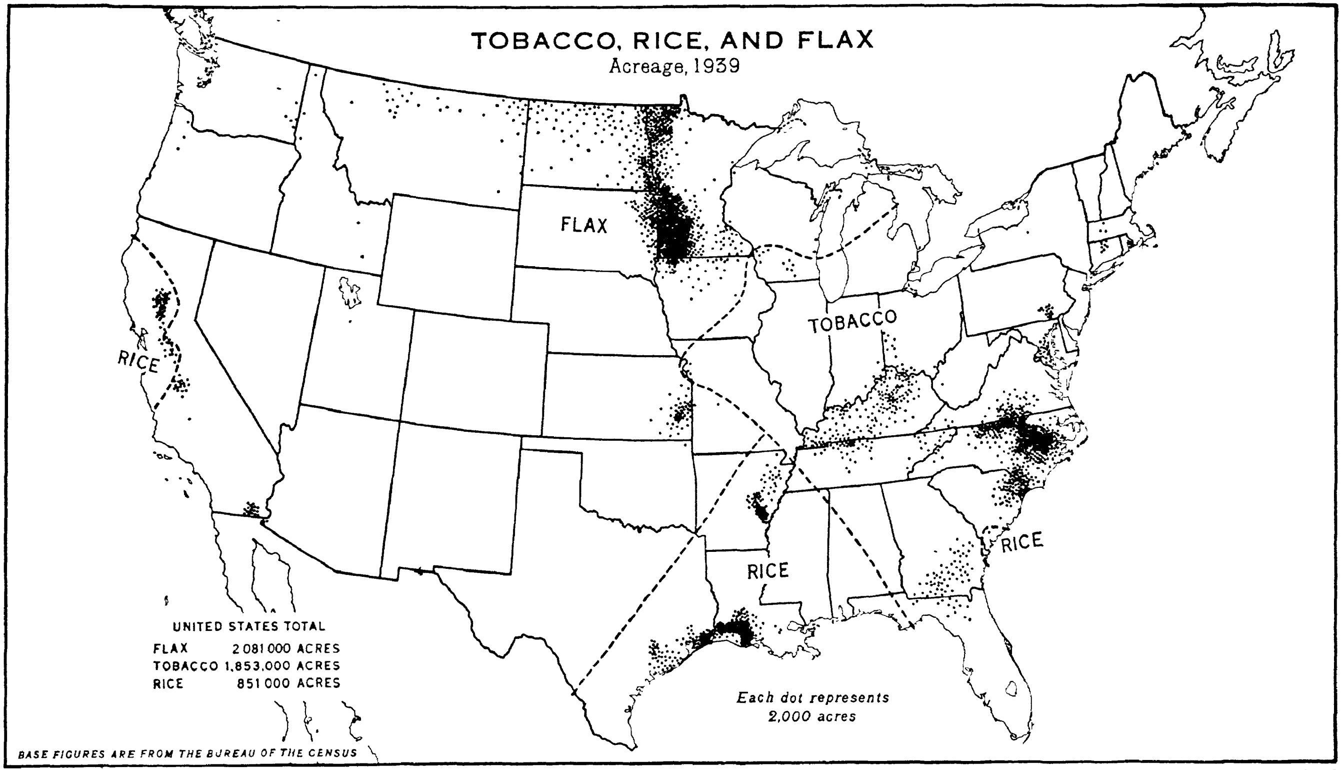

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Fig. 2.—Tobacco, rice, and flax producing areas in the United States.

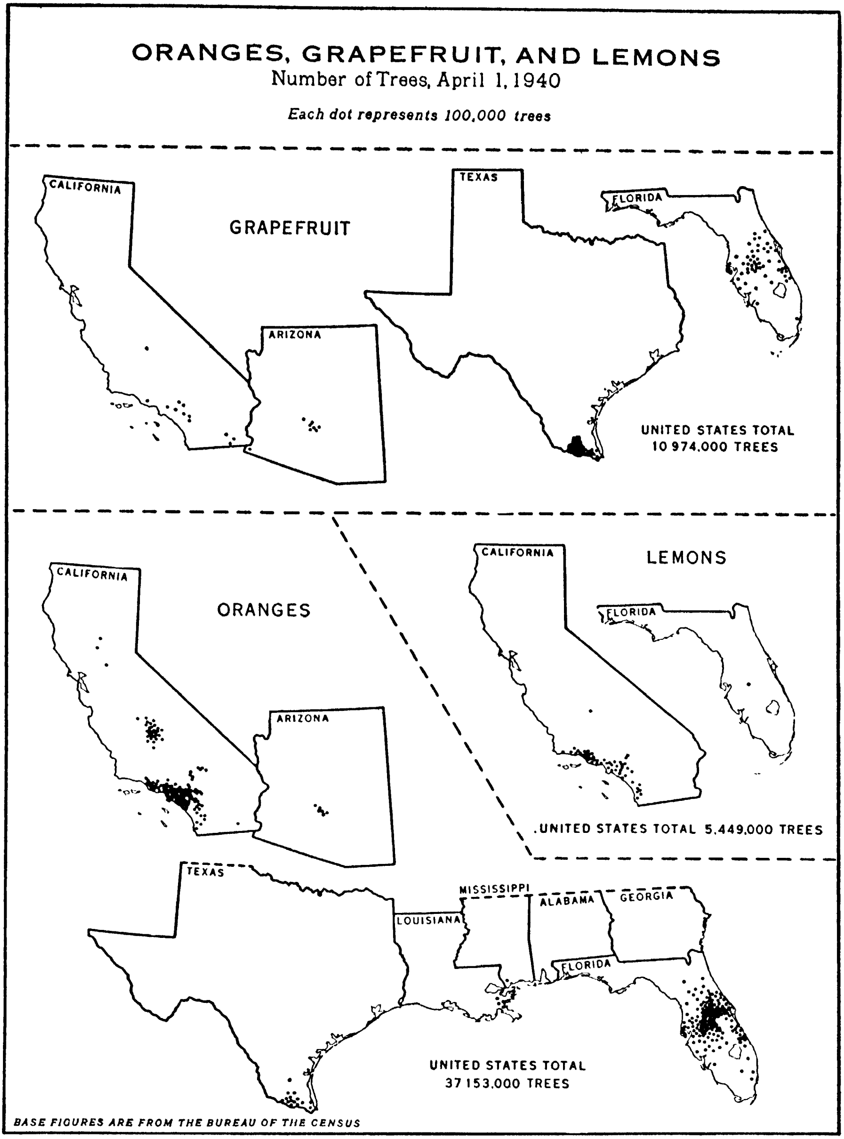

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FIG. 3.—Orange, grapefruit and lemon producing areas in the United States.

The localization of production in the areas where each product can be produced most cheaply is a continuous process. The areas shift as new varieties are evolved, as new inventions or methods lower transportation costs or improve services, as irrigation projects are developed, or as movements in population take place. The extension of the railroads westward in the 1870's and the perfection of the refrigerator car are old and familiar examples. The experimental shipment of highly perishable fresh fruits by airplane in 1945 is one of the newest. Shifts in the location of the producing areas for different products are still proceeding. This is true even for such staple products as wheat and cotton.[6] What the cotton picker and other power implements will do to the Cotton Belt is something to lie awake at night about. Shifts in location and other changes will continue as long as new developments permit new areas to produce more cheaply than old ones.

LOCALIZATION OF AGRICULTURAL PRODUCTION HAS REDUCED PRODUCTION COSTS BUT INCREASED MARKETING COSTS

The localization of production in areas far from the market reduces production costs, but it increases marketing costs. A product that used to be raised close to market at a cost of 70 cents may have cost only 30 cents to market, thus selling for $1.00 to the consumer. If a new, more distant, area is opened up where the product costs, say, only 40 cents to produce, marketing costs may rise, perhaps to 40 cents, because of the greater distance to be covered. At first, the product continues to sell for $1.00, and the producers in the new area get $1.00 — 40c = 60c for their product, which cost them only 40 cents to produce. They make high profits, and these high profits induce expanded production in the new area until that expansion in production lowers prices, say, to 80 cents. Marketing costs now have risen from 30 per cent of the consumers' dollar to 50 per cent. But consumers are better off than before, for they can now buy for 80 cents the product that used to cost them $1.00. And producers are better off too, for reductions in the cost of food permit reductions in the costs of manufactured products that farmers buy.

---

[6] Wheat production in the hard winter wheat states (Colorado, Kansas, Nebraska, Oklahoma, and Texas) during the past five years was more than twice as great as it was during the five years just before World War I; but in the eastern states, wheat production declined. (*The Wheat Situation.* BAE, USDA, May–June, 1945, p. 1.)

"The tractor and combine have revolutionized wheat farming since 1910, making possible the increases in size of farm through reductions of over half in the amount of labor required per acre in the specialized wheat areas". . . "Farms in the wheat areas are now much larger than before World War I. Typically family-operated wheat farms in the heart of the hard winter wheat region increased 88 per cent in size, and 94 per cent in acreage planted to wheat per farm between the two periods 1910–14 and 1938–42. The changes in this area represent the general trend of change in all of the major specialized wheat areas." (Carl P. Heisig and Ernest R. Ahrendes, "What Wheat Policies After the War?" *The Agricultural Situation,* BAE, USDA, July, 1945, p. 9).

Thus high marketing costs do not necessarily mean inefficiency. They may merely mean that production costs are so low in areas far from market that those low costs of production more than offset the high costs of marketing. They therefore permit the commodity to be produced at lower total cost than if it were raised close to market where marketing costs would be low.

MARKETING NOW COSTS MORE THAN PRODUCTION

The specialization and localization of agricultural production in areas far removed from the consumer has required the development of a huge and expensive agricultural marketing system to get the goods from producer to consumer. In most cases, it costs more to get the commodity from the farmer to the distant consumer than it cost the farmer to produce the commodity in the first place. On the average, in peacetime, the farmer gets less than half the consumer's dollar spent for food—about 40 per cent, to be exact.[7] Or to put it the other way around, the marketing system gets more than half the consumer's dollar. On the average, it costs more to market farm products used for food than it does to produce them.

"The national bill for marketing food products from farmers to consumers in the United States at the retail-purchase level averaged about 8.4 billion dollars for the five pre-war years 1935-39. Farmers received 5.7 billion dollars from the sale of the same products. These combine into a pre-war annual average retail value of 14.2 billion dollars after adding 0.1 billion dollars of processing taxes levied in 1935. It has been estimated that, in 1939, full-time equivalent persons producing farm food products for sale into domestic consumption numbered about 6½ million, whereas full-time equivalent persons engaged in marketing these products numbered about 4 million."[8]

These are merely simple statistical facts. They do not necessarily mean of themselves that agricultural marketing is inefficient. They merely mean that agricultural marketing is quantitatively more important, measured by the economic yardstick of dollars and cents, than agricultural production. A 10 per cent saving in marketing costs means more than a 10 per cent saving in production costs. Agricultural marketing problems, therefore, deserve as much or more attention than agricultural production problems.

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[7] *Price Spreads Between Farmers and Consumers for Food Products, 1913–44,* BAE, USDA, Misc. Pub. No. 576, 1945, p. 6. This subject is discussed fully in Chapter 14.

[8] *Ibid.* The figure of 5.7 billion dollars covers only farmers' income from the sale of food products. It is smaller than the 8 billion dollars given in the opening of this chapter, which covers all products—fibers, hides, etc., as well as food products.

The figure of 14.2 billion dollars is the retail value of the food that is domestically produced and consumed. The figure of 15.2 billion dollars given in the following chapter covers imported foods as well.

AGRICULTURAL PRODUCTION AND MARKETING PROBLEMS CONTRASTED

Agricultural production problems are easier to see and easier to deal with than marketing problems. They are essentially the same today as they were in 1794. Only their form has changed. Then, they were expressed in physical terms of abundant production for family use. Now they are expressed in economic terms of production at the lowest cost for maximum profits; for, other things being equal, the lower the costs, the greater the profits.

These production problems, and their solutions, lie all within the borders of the individual farm. The setting is the fertility of the soil, the topography, the drainage, the rotation, the climate, the layout of the fields and buildings, the equipment, and the way they are all used—all physical things, close at hand. They set the problem of low-cost production and the answers to it.

Agricultural marketing problems are different. They arise in most cases from economic and physical conditions that are not primarily internal, but external to the farm. They are as important as the problems of production costs, for high prices attained by following good marketing practices mean high profits, just as much as low production costs mean high profits.

These marketing problems lie entirely outside the borders of the farm. They are more difficult to get hold of than the problems of low-cost production. But in some ways they are more fundamental than the problems of production; they involve questions which must be answered before production is undertaken at all.

No matter how durable our hosiery manufacturers make cotton hose, women will buy nylon hose instead. No matter how much pride meat packers take in their rich, yellow, well-flavored lard put up in suitable paper cartons, many housewives seem to prefer a white, bland, glass-packaged cooking fat. Swift's home economist hit the nail on the head. She advised the directors of the company, "You'll find it a lot easier to change the product to suit the women than to change the women's minds to suit your product."

Farmers are in the same sort of situation. Their first problem each year is to determine what people want, what prices they will pay, and what quantities they will take, before they start production.

This is not an easy thing to do. The basic *need* for food and clothing as a whole remains fairly constant from year to year. But the *demand* (the desire plus the purchasing power to back it up) varies greatly from year to year, through booms, depressions, war and peace. The demand for food and clothing may be twice as strong (consumers may spend twice as much money) for the same goods at one time as at another.

In addition, the relative demand for different farm products is continually changing. The closing of many foreign sources of fats and oils during World War II, for example, created a great increase in the demand for soybeans in the United States. No one knows just how much the demand will change back again with the return of peace. The same sort of thing is true of dried milk, dried eggs, and many other farm products. With the return to peacetime conditions, changes in demand will be less violent than they were in wartime, but they will nonetheless continue to take place; and drouth and floods will continue to affect the production of competing crops and products, making it advisable from time to time to expand the production of one crop and contract the production of another, to feed more or less beef cattle or hogs, or to produce more or less milk.

Most commercial farmers realize that they are engaged in a business that needs to be handled much like any other business. They recognize that they cannot simply continue to produce crops by traditional production methods, but need to keep up-to-date with the newer productive equipment, new varieties, etc. Similarly, they need to keep abreast of new developments in the marketing of their products. They are producing for the market. They need to study that market like any other manufacturer, observe what changes are taking place in the demand for their products, and produce the type that is most in demand. Then they need to keep abreast of new marketing methods that will get their products to market in the best condition and at the lowest cost.

1. The first agricultural marketing problem, therefore, is to determine each year what kinds of food and fiber consumers want, and what quantities of each kind they will take at different prices. Farmers need to determine these things each year before they start production, and lay their production plans accordingly.

2. The second agricultural marketing problem is to sell the commodities that are produced to the market outlet that will bring in the greatest net returns—"the high net dollar"—to the producer.

3. The third problem is to get the commodities marketed at as low a cost as possible. A penny saved in marketing costs adds as much to profits as a penny saved in production costs. Farm income is equal to the total amount that consumers spend for farm products, minus total marketing costs. Obviously any reductions in marketing costs add just that much to farm income.

These three problems constitute the subject matter of this book. They are considered in the order just given in the three parts into which the book is divided.

CHAPTER 2

The Demand for Farm Products

The job of determining the demand for farm products in 1794 was easy. All that the self-sufficient farmer had to do was to consider his own family needs for food and clothing, and produce accordingly. If he produced more of one product than necessary, and less of another, the consequences were not serious. He and his family would simply eat more cabbage, say, and less carrots, than they really wanted, but no great harm would be done.

The commercialized farmer of today has to take a broader view and face more adverse effects if he does not size up the market demand accurately. He has to consider the needs and the purchasing power of the whole United States. In the case of a few products such as cotton and wheat, he has to widen his perspective to take in the world. And he has to do the job afresh each year, for market conditions are continually changing. If he and others produce too much of one product, or if the demand for that product weakens, the consequences may be serious. The price he gets for that product may be so low that he comes out with a loss on his year's operations instead of a profit.

The great bulk of the farm products grown in the United States are consumed in the United States. We will therefore examine the domestic demand for farm products first.

THE DOMESTIC DEMAND

There are 140 million people in the United States. They are all hungry; they all want three meals a day; and they all need clothes. The size of the job of feeding and clothing these 140 million people is indicated in Table 1, which shows their per capita consumption in 1935–39 and 1943. It also shows estimates of per capita consumption if postwar reconversion is completed and full peace-time employment exists by 1950.

The total food bill for the United States in 1944 was 30.4 billion dollars. This happens to be exactly double the cost in 1935–39. The bill then was 15.2 billion dollars.[1]

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[1] *Survey of Current Business,* June 1944, Bureau of Foreign and Domestic Commerce, U S. Dept. of Commerce.

TABLE 1

ANNUAL PER CAPITA CONSUMPTION OF SELECTED AGRICULTURAL COMMODITIES, UNITED STATES, AVERAGES 1935–39, 1943, AND ESTIMATES FOR 1950 UNDER FULL EMPLOYMENT*

Commodity	Average 1935–39 *Lbs.*	1943 (civilian only) *Lbs.*	1950 Estimated per Capita *Lbs.*	1950 Percentage of 1935–39 Average
Food:				
Beef and veal (dressed weight)...	62.8	57.7	71.0	113
Lamb and mutton (dressed weight)	6.7	6.3	7.0	104
Pork and lard (dressed weight)....	67.1	87.1	96.0	143
Chickens (dressed weight)......	17.9	28.1	25.0	140
Turkeys....	2.6	3.2	5.0	192
Eggs....................... . .	37.3	42.9	43.5	117
Dairy products (fluid milk equivalent).........	801.3	767 2	895.0	112
Fats and oils (excluding lard and butter)....... .. .	20.3	19.2	21.0	103
Citrus fruit...........	48.8	59.7	75.0	154
Other fresh fruit†......	89.4	61.3	90.0	101
Commercial truck..	95.0	88.7	109.0	115
Canned vegetables (processed weight)......	31.1	36.1	43.0	138
Potatoes....	130.6	132.4	116.0	89
Dry beans (cleaned)..... .	8.8	8.5	9.0	102
Sugar (refined)....... . . .	96.5	80.3	115.0	119
Wheat.....................	221.4	225 9	212.0	96
Corn (excluding malt liquor)....	56.3	68.3	58.0	103
Peanuts (shelled)...	4.3	7.5	6.0	140
Nonfood: ‡				
Wool (mill consumption)§.......	4.5	7.7	6.0	133
Cotton.........	25.3	39.8	30.0	119
Tobacco (farm sales weight)	7.6	9.8	10.0	132

* In terms of calories (retail-weight basis), per capita consumption at full employment in 1950 would be approximately 10 per cent above the 1935–39 average and 4 per cent above the peak consumption of 1941.

† Excludes consumption of noncommercial apples.

‡ Estimates for 1943 represent average consumption for the total population, as military consumption is not available.

§ Apparel wool, grease basis.

Source: *What Peace Can Mean to American Farmers*, USDA Misc. Pub. 562, 1945, p. 17.

Total consumer income in 1944 was 160.9 billion dollars. The national family therefore spent nearly 20 per cent of its income on food.

The place of foods in the patterns of consumer purchases is shown in Figure 4. This chart is based upon estimates prepared by the National Resources Planning Board, in turn derived from the extensive Consumer Purchases Survey of 1935–36. The figure represents an accounting for national consumer income in 1935–36, by income classes, classified into expenditures for goods derived chiefly from farm produce, expenditures for other goods, and savings, gifts, and

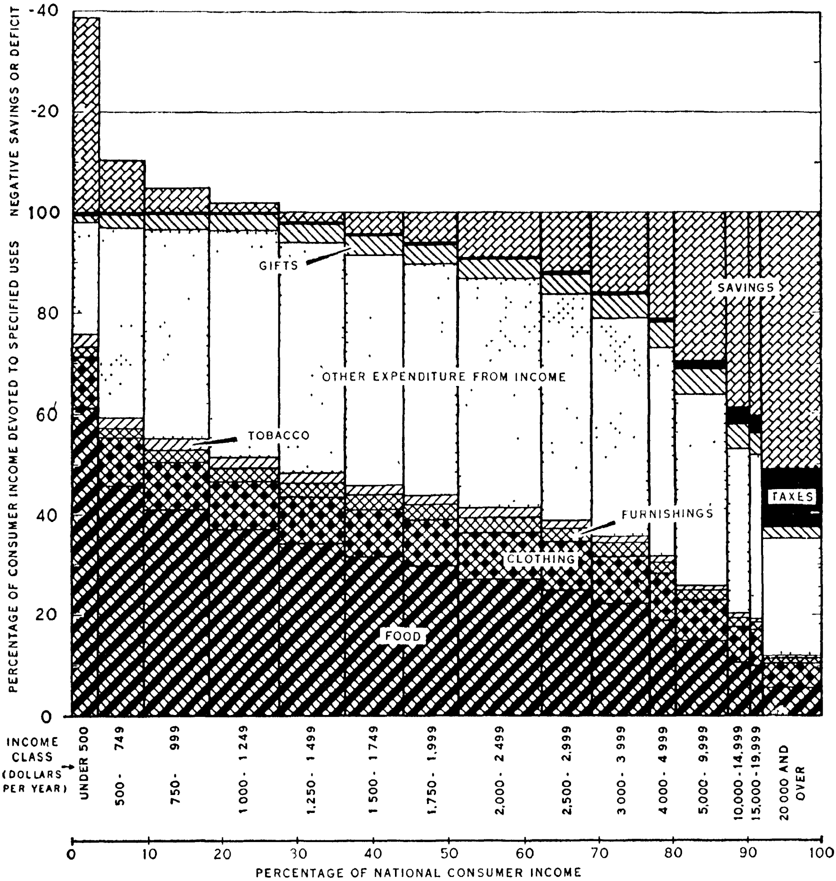

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FIG. 4.—Allocation of consumer income to savings, gifts, personal taxes, expenditures for consumers' goods derived from agricultural products, and other expenditures, by income classes, 1935-36.

taxes. The width of the bar representing each income class indicates the importance of aggregate income for that class in the total national consumer income. The vertical division of each bar measures the division of income into various types of expenditures. Comparisons of dollar aggregates can be made in this chart simply by comparing areas.

Consumer expenditures for groups of products derived chiefly from farm produce made up more than 50 per cent of income in 1935-36 for all consumer classes having incomes below $1,250 per year. As income decreases, expenditures for food take an increasing proportion of income, amounting to more than 60 per cent for the class under $500. From the chart it is evident that although consumers having incomes below $1,750 accounted for less than half the total national consumer income, they contributed a good deal more than half the total consumer expenditures for food. This contrasts with the consumer expenditures for other classes of goods derived from farm produce such as clothing, furnishings, and tobacco. The percentage of income spent for each of these categories varies much less than for foods among income classes.[2]

CHANGES IN PER CAPITA CONSUMPTION OVER A PERIOD OF TIME

The per capita consumption of food has remained practically constant over the past 35 years at about 5 pounds per person per day. The average per capita consumption from 1909 to 1939 was 4.96 pounds; the 1935-39 average was 4.91 pounds.[3]

From 1909 to 1939, per capita consumption rose only slightly, and showed very little variation from year to year. In no year did consumption rise above 5.18 pounds nor decline below 4.69 pounds. Only in 1944, the peak war year, did (civilian) per capita consumption rise as much as 10 per cent above the 1935-39 average.

This stability in total per capita consumption of food, however, masks the diverse changes that have been taking place in the per capita consumption of different foods. The consumption of some foods has increased markedly; that of others has decreased.

Figure 5 shows that from 1909-13 to 1940-44 the per capita consumption of fruits and vegetables increased 40 per cent. Dairy products increased 25 per cent. Fats and oils (excluding butter) went up 15 per cent. Eggs moved cyclically about a horizontal trend. Meats, poultry, and fish as a group declined about 10 per cent, grain products about 25 per cent, and potatoes and sweet potatoes about 30 per cent.

These changes in the consumption of different foods have improved the United States average diet from a nutritional standpoint.

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[2] *Price Spreads Between Farmers and Consumers for Food Products, 1913-44,* BAE, USDA, Misc. Pub. No. 576, 1945, pp. 4-5.

[3] Harold Barger and Hans H. Landsberg: *American Agriculture, 1899-1939: A Study of Output, Employment, and Productivity,* National Bureau of Economic Research, p. 309, and *The National Food Situation,* BAE, USDA, Aug.-Sept., 1945, p. 1. See also BAE Chart, Neg. 45402.

Up to the time of World War II, as shown above, the consumption of food remained almost constant at a little less than 5 pounds per capita. But the nutritional content of those 5 pounds improved. The average consumer in the United States eats no more now than he used to eat 30 years ago, but he is somewhat better fed.

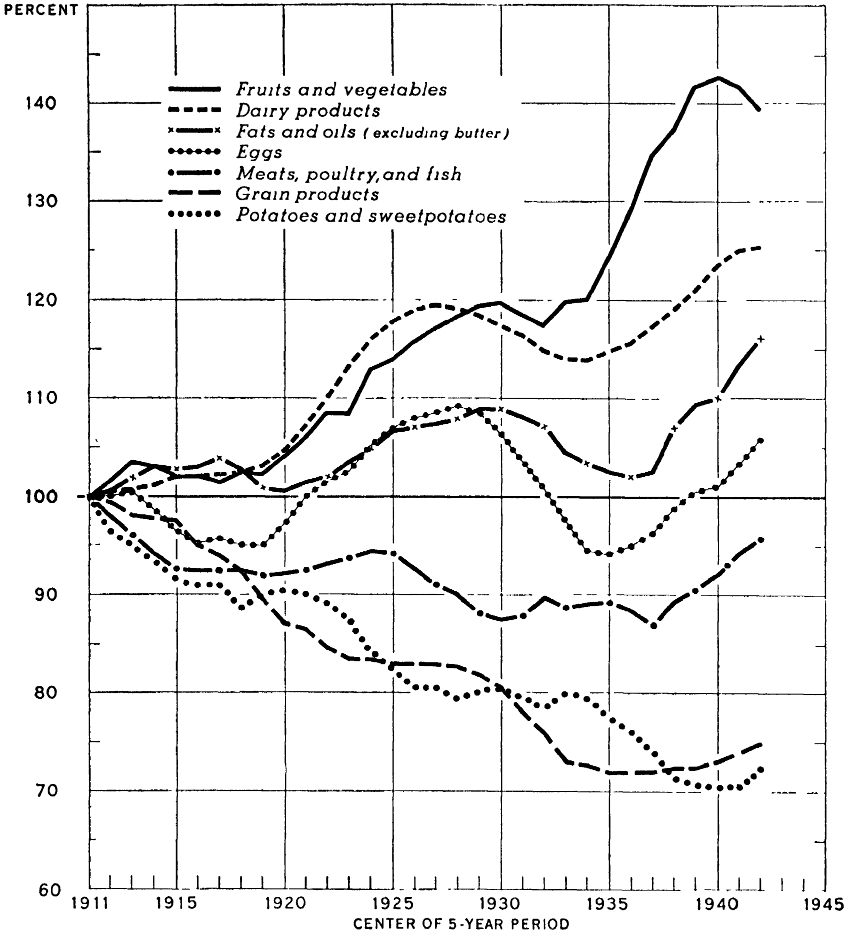

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FIG. 5.—Trends in per capita consumption of foods, by groups. (Five-year moving averages, 1909-13 = 100)

DIFFERENCES IN FOOD CONSUMPTION BY INCOME GROUPS

The consumption figures given just above are average figures, showing food consumption by the average consumer. They cover a wide range of dispersion. Some people eat more than others, and some people eat more of some foods and less of other foods.

The chief reason for the differences that exist in food consumption is the differences that exist in money incomes. Table 2 shows how the well-to-do eat more of most foods than people with small incomes. They eat three or four times as much fruit, and two or three times as much meat, eggs, and dairy products. They eat about twice as much tomatoes and other vegetables, excluding potatoes. They eat about 50 per cent more potatoes and bread (although the increase all takes place in the lowest two or three brackets).

Some foods, however, are eaten in smaller quantities by the higher income groups. They are "other fats and oils" (principally lard), flour and other cereal products, and dry vegetables (beans and peas).

Figure 6 shows the relations between food consumption and income for several of the major food groups and for food as a whole. In this chart, income is plotted along the horizontal scale and quantities of food consumed are plotted up the vertical scale. The figure shows the relations by means of what are called income-quantity curves, where quantity refers to pounds of food.

The income-quantity curve for food as a whole has an elasticity of about 0.2; food consumption increases about 0.2 times as much as income increases. A man with 100 per cent more income than another man (that is, with twice as much income as the other man) eats, on the average, 20 per cent more food. This percentage holds over the range of income shown in Figure 6, with minor variations from one income group to another. Above the range shown, the percentage probably declines.

Table 3 shows the same sort of information as Table 2, with one important difference. Table 2 showed the relations between income and pounds of food consumed. Table 3 shows the relation between income and expenditures for food. The one table shows pounds eaten or drunk; the other shows dollars spent.

The food items in Table 3 are classified in somewhat different categories from those in Table 2, but the table shows that food expenditures—dollars spent for food—increase with increasing income for all the food groups except "other fats and oils." The table also shows that total expenditures for food increase more rapidly with increasing income than do pounds of food consumed.

The elasticity of the income-*expenditure* curve for food is about 0.4. This is twice as great as the income-*quantity* elasticity shown above. That is to say: A man with twice as much income as another

TABLE 2

Annual Per Capita Consumption of Major Food Categories by Families and Single Individuals (Excluding Military Personnel and Institutional Groups), by Income Level, United States, 1941 *

Food Category	Families and Single Individuals With Incomes of						
	Under $500	$500–$1,000	$1,000–$1,500	$1,500–$2,000	$2,000–$3,000	$3,000–$5,000	$5,000 and Over
	Lbs.	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*
Meats:							
Beef	21.4	36.1	45.4	53.4	57.7	62.2	77.5
Veal	3.0	3.7	5.6	7.0	8.5	9.9	12.6
Lamb and mutton	.8	2.1	3.7	5.8	8.6	12.4	25.7
Bacon and salt side	31.8	24.3	21.5	21.1	21.1	23.1	25.5
Other pork	17.8	24.7	32.9	34.9	39.0	41.9	45.9
Poultry	10.4	11.5	13.6	15.3	18.9	27.6	50.1
Other	8.5	13.8	16.3	16.7	16.4	12.9	11.9
Sea food	14.2	14.0	14.3	15.6	16.2	17.9	23.0
Eggs	22.0	29.5	33.6	36.3	37.9	38.0	42.2
Dairy products:							
Fluid milk	198.0	262.5	300.8	301.2	316.4	330.3	377.4
Cheese	3.9	4.9	6.3	7.7	8.7	9.2	10.3
Butter	9.8	13.6	14.9	16.3	17.2	18.5	20.9
Cream	3.4	3.7	6.1	7.5	10.2	14.8	24.7
Ice cream	2.1	6.1	10.1	13.9	17.8	21.7	33.1
Evaporated and other milk	12.1	20.1	20.5	20.4	18.5	13.9	14.2
Other fats and oils	33.2	31.3	29.3	28.0	27.6	27.9	32.1
Cereal products:							
Bread	26.1	58.8	73.5	80.7	81.9	80.4	93.5
White flour	141.4	97.7	71.3	59.4	54.8	50.0	50.9
Other baked	5.3	8.9	14.0	17.0	18.1	19.1	27.6
Other	124.0	80.8	62.7	56.8	55.5	55.5	61.4
Vegetables:							
Potatoes	106.1	141.2	156.5	154.1	154.3	150.9	154.7
Fresh tomatoes	9.1	13.2	15.0	16.4	18.8	20.9	24.6
" leafy, green, yellow	64.0	67.7	68.3	73.9	80.2	85.9	93.1
" other	62.3	57.6	53.4	60.0	66.2	75.9	85.8
Canned tomatoes	6.3	9.4	11.3	12.6	14.2	15.3	20.1
" leafy, green, yellow	6.2	9.6	12.4	13.0	14.0	14.7	16.0
" other	9.6	17.8	23.0	23.1	22.9	22.6	20.4
Dried	12.6	11.5	10.8	9.0	7.5	5.9	4.9
Fruits:							
Fresh citrus	9.8	24.1	39.2	53.0	66.6	84.9	122.1
" other	54.7	69.7	85.0	102.1	121.3	151.0	223.1
Canned	13.7	18.0	26.4	31.2	36.9	43.6	55.5
Dried	3.1	4.5	6.3	6.6	7.1	7.7	9.2
Sweets:							
Sugar	56.5	61.5	64.5	63.6	65.4	65.4	68.9
Other	30.8	27.5	28.6	27.1	27.3	27.0	37.0
Nuts	1.1	2.4	3.3	3.7	3.9	4.2	7.1
All foods, excluding miscellaneous	1,135.1	1,283.8	1,400.4	1,464.4	1,557.6	1,663.1	2,003.0

* Based on 129.9 million family members and single individuals.

Source: *The National Food Situation*, Bureau of Agricultural Economics, United States Department of Agriculture, July, 1942, p. 18.

More recent data have just been published by W. W. Cochrane in *High-Level Food Consumption in the United States*, BAE, USDA, Misc. Pub. No. 581, December 1945. They are reproduced on page 437 in appendix E of this book.

man eats on the average 20 per cent more food, as shown above; and he pays 40 per cent more for his food, presumably because he buys more expensive goods, such as steak, and wastes more of what he buys.

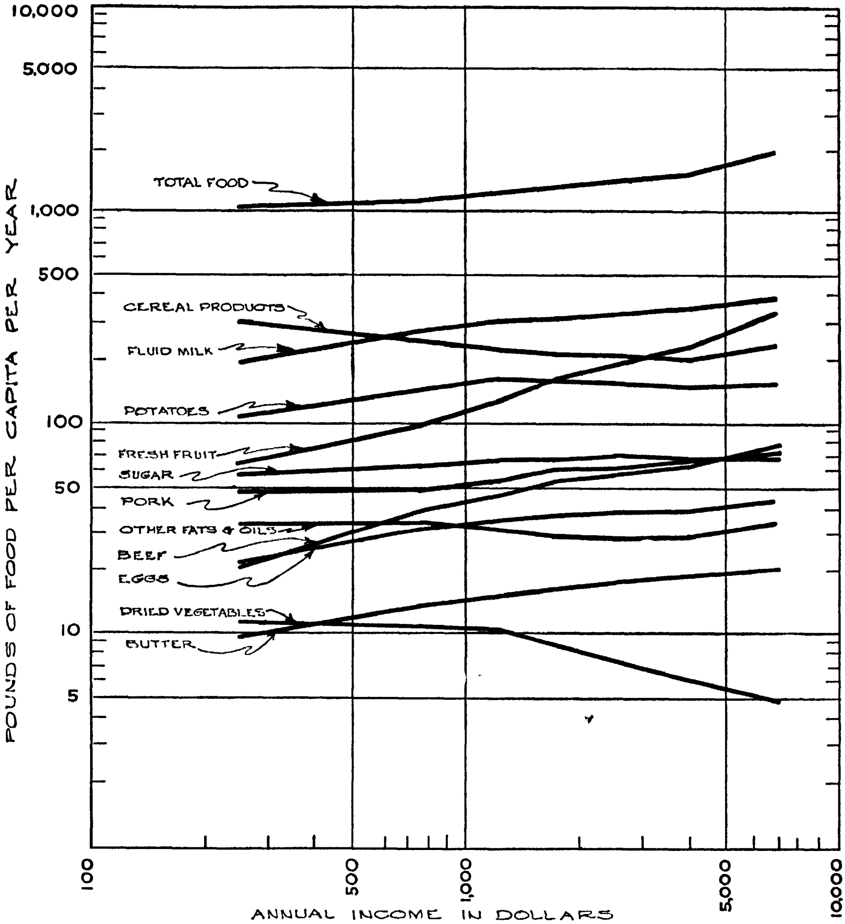

FIG. 6.—Relation between consumption of different foods and income.

NUTRITIONAL NEEDS

It is evident from these tables that most of the people in the United States are not getting as much food as they would like to eat, because they don't have enough money to buy it.

TABLE 3

ANNUAL PER CAPITA EXPENDITURES IN DOLLARS FOR ELEVEN FOOD GROUPS BY FAMILIES AND SINGLE INDIVIDUALS (EXCLUDING MILITARY PERSONNEL AND INSTITUTIONAL RESIDENTS) BY INCOME LEVEL, UNITED STATES, 1941

Income Level per Family or Individual	Per Capita Expenditures, by Food Groups											
	Total	Meats, Poultry and Sea Food	Eggs	Butter	Other Fats and Oils	Other Dairy Products	Cereal Products	Potatoes	Other Vegetables	Fruits and Nuts	Sweets	Miscellaneous
Under $500	77.80	19.08	3.23	2.86	4.43	9.74	12.37	1.70	8.99	3.48	5.88	6.04
$500-$1,000	104.27	27.33	4.68	4.28	4.16	16.04	13.75	2.51	11.41	5.81	6.34	7.96
$1,000-$1,500	128.42	35.93	5.63	4.98	3.76	21.01	15.12	2.88	13.38	8.70	7.37	9.66
$1,500-$2,000	145.94	42.11	6.38	5.64	3.68	24.03	15.83	3.05	15.25	10.83	7.81	11.33
$2,000-$3,000	163.93	48.76	6.99	6.05	3.69	27.59	16 32	3.06	17.20	13.22	8.29	12.76
$3,000-$5,000	188.83	58.30	7.41	6.68	3.82	32.00	16 22	3.11	19.55	16.64	9.23	15.87
$5,000 and over	261.06	83.88	9.53	7.67	4.66	43.52	20.23	3.46	24.34	24.23	14.11	25.43
All levels	145.24	42.17	6.11	5.38	3.91	23.73	15.46	2.85	15.14	10.89	7.95	11.65

Source: *The National Food Situation*, BAE, USDA, July, 1942, p. 19.

The percentages of the United States population in the various income groups in the spring of 1942 were: No listed income, 3 per cent; $0-$499, 16 per cent; $500-$999, 14 per cent; $1,000-$1,499, 13 per cent; $1,500-$1,999, 14 per cent; $2,000-$2,999, 21 per cent; $3,000 or more, 19 per cent. (USDA Misc. Pub. 550, *Family Food Consumption in the United States, Spring, 1942.* p. 3, 1944).

Are they getting as much food as they *need,* nutritionally?

This question can be answered by comparing the amounts actually consumed with some nutritionally adequate dietary standard. A good standard of this sort is the pre-war moderate-cost diet recommended by the Bureau of Human Nutrition and Home Economics.[4] This standard is shown in Table 4.

TABLE 4

MINIMUM FOOD REQUIREMENTS AT THE GOOD ADEQUATE LEVEL*
(per capita per year)

Food Group	Average	Farm Single	Farm Family	Nonfarm Single	Nonfarm Family
	Lbs.	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*
Milk (or its equivalent) †	645	610.6	655.7	578.3	651.4
Potatoes (Irish and sweet)	155	215	167	176	145
Dry beans, peas, and nuts	12	18	13	15	11
Tomatoes and citrus fruit.	100	103	100	104	100
Leafy green and yellow vegetables	159	160	155	165	159
Other vegetables and fruit	203	239	206	221	197
Eggs...	37.5	37.5	37.5	37.5	37.5
Meat, poultry, and fish ..	131	167	135	154	125
Flour and cereals (baked goods equivalent). .	186	270	205	207	170
Butter and other fats ‡ ..	57	82	61	68	52
Sugar and syrups . .	57	82	61	68	52

* Equal in all respects to the pre-war, moderate-cost diet worked out by the BHNHE and weighted for age and activity characteristics of the population by principal groups.

† Fluid whole milk and equivalent quantities of evaporated or dried milk or cheese; does not include milk from which only cream or butterfat is used for human consumption.

‡ Includes bacon and salt side as well as butter, margarine, lards, and other table and cooking fats.

This is a pretty plain sort of diet. But the comparison with the quantities of food actually consumed, by income groups, shows that the diets of the low income groups are deficient in several different kinds of food. Table 5 shows that these dietary deficiencies run up to as much as 50 per cent in some foods.[5]

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[4] Based upon the nutrient requirements set forth in *Recommended Dietary Allowances,* Reprint and Circular Series, No. 115, National Research Council, Washington, D. C. January, 1943.

It is possible to work out a nutritionally adequate diet that would cost less than half as much as the "Basic Food Allotment" given here. In August, 1939, it would have consisted only of wheat flour, evaporated milk, cabbage, spinach, and a liberal allowance of dried navy beans, and its per capita annual cost would have been only $39.93. In August, 1944, because of changes in relative prices, the beans and evaporated milk would have been replaced by pancake flour and pork liver. (George Stigler, "The Cost of Subsistence," *Journal of Farm Economics,* Vol. XXVII, No. 2, May, 1945, pp. 303–14.)

Few people would want to live on these diets. The BHNHE diet given in Table 4 takes considerations of taste into account as well as of nutrition.

In 1942, between one-quarter and one-third of the families and individuals in the United States had net incomes of less than $1,000 a year. Table 3 shows that those with less than $1,000 per year spend less than $100 per person per year on food. Table 5 shows that their diet is deficient in several important food items. It is evident, therefore, that even during boom times such as World War II, about a quarter of the people in the United States were still not getting enough of the right kinds of food.

"It has been estimated that in the spring of 1942, before rationing and before food shortages, probably at least one-third of American families had diets deficient in calcium, riboflavin, or both, compared to recommendations of the National Research Council. Smaller proportions of the families had diets deficient in the other nutrients. Although these estimates show improvement since 1936, they indicate that there are still many people in this country whose food does not measure up to recommended dietary practice . . . If all families were to follow a moderate-cost food plan which would assure good nutrition, at least a fifth more milk and citrus fruit and tomatoes would be needed than were available in 1943, and twice as large quantities of green and yellow vegetables."[6]

The distribution of income is responsible for this inadequate nutrition, not the distribution of physical goods. The fault lies in not getting enough purchasing power into the hands of the low-income groups to enable them to buy the food they need.

Attempts have been made to overcome this nutritional shortcoming of the income-distribution system on a federal scale. Relief payments to unemployed workers during the 1930's were one example. Another program was the Food Stamp Plan, under which "stamp money" good only for the purchase of food was distributed to persons on relief.[7] The plan was designed to hold participants' expenditures of their own money for food constant, so that their total expenditures for food would increase by the amount of the food stamps they received. (Otherwise, they would spend less of their

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[5] W. W. Cochrane: *High-Level Food Consumption in the United States,* BAE, USDA, Misc. Pub. No. 581, 1945.

[6] G. Lois Nelson, BAE, and Faith Clark, BHN and HE, "Nutritive Value of U. S. Food Supply," *The Agricultural Situation,* USDA, 1944, p. 12.

[7] N. L. Gold, A. C. Hoffman, and F. V. Waugh: *Economic Analysis of the Food Stamp Plan,* USDA, 1940. The plan is further analyzed in Part II of *Agricultural Price Control,* Iowa State College Press, 1945, by the present author.

TABLE 5

PER CAPITA CONSUMPTION OF FOOD AMONG NONFARM FAMILIES BY INCOME GROUPS AT THE BASE LEVEL, 1941, WITH PER CENT OF NUTRITIONAL ADEQUACY*

Food Group	Under $500 †		$500–$1,000 †		$1,000–$1,500 †		$1,500–$2,000 †		$2,000–$3,000 †		$3,000–$5,000 †		$5,000 and Over †	
	Consumption	Adequacy	Consumption	Adequacy	Consumption	Adequacy	Consumption	Adequacy	Consumption	Adequacy	Consumption	Adequacy	Consumption	Adequacy
	Lbs.‡	*Pct.*	*Lbs.*‡	*Pct.*	*Lbs.*‡	*Pct.*	*Lbs.*‡	*Pct.*	*Lbs.*‡	*Pct.*	*Lbs.*‡	*Pct.*	*Lbs.*‡	*Pct.*
Milk (or its equivalent)§...	180.2	27.7	299.3	45.9	366.6	56.3	381.0	58.5	408.9	62.8	435.2	66.8	510.2	78.3
Potatoes (Irish and sweet)..	85.9	59.2	117.9	81.3	117.1	80.8	118.6	81.8	117.7	81.2	113.5	78.3	124.2	85.6
Dry beans, peas, and nuts.	14.1	128.2	15.0	136.4	13.9	126.4	12.4	112.7	11.4	103.6	10.7	97.3	13.7	124.5
Tomatoes and citrus fruit....	25.6	25.6	55.8	55.8	77.5	77.5	96.7	96.7	116.7	116.7	141.3	141.3	193.0	193.0
Leafy green and yellow vegetables..... ..	39.0	24.5	56.5	35.5	67.1	42.2	77.6	48.8	86.1	54.2	95.1	59.8	117.4	73.8
Other vegetables and fruit ..	98.5	50.0	148.8	75.5	189.3	96.1	225.6	114.5	255.7	129.8	301.8	153.2	426.7	216.6
Eggs§.....	22.1	58.9	32.0	85.3	35.3	94.1	37.6	100.3	39.4	105.1	40.3	107.5	45.8	122.1
Meat, poultry, and fish..	73.8	59.0	114.2	91.4	135.5	108.4	152.9	122.3	170.0	136.0	192.7	154.2	265.4	212.3
Flour and cereals (baked goods equivalent).	280.6	165.1	197.0	115.9	179.2	105.4	174.4	102.6	174.9	102.9	169.3	99.6	197.8	116.4
Butter and other fats§. ..	66.5	127.9	59.8	115.0	59.1	113.6	60.2	115.8	61.3	117.9	63.3	121.7	73.4	141.2
Sugar and other sweets§.. ..	93.7	180.2	90.3	173.6	95.8	184.2	94.4	181.5	96.7	186.0	97.3	187.1	121.2	233.1

* Relative to the minimum nutritional standard presented in Table 4.

† Money plus nonmoney income.

‡ Retail or kitchen weights.

§ These estimates of per capita consumption are slightly understated relative to the average per capita series of the BAE, since certain quantities used in manufacturing are not included here. This fact is taken into consideration in the BHNHE diet plans, hence the measure of adequacy is a proper one.

own money for food, thereby in effect converting the "food money" into ordinary money). Another program was the School Lunch program, under which hot lunches are served free to school children at noon.[8]

These programs declined, except for the school lunch program, in World War II, when the average income in the United States doubled, but they are likely to be revived, perhaps in different forms, as the nation gets back to normal peace-time conditions. Senator Aiken reintroduced a modernized form of the Food Stamp plan in a bill, S. 1151, in 1945. Under this plan, a participant would be able to purchase stamps providing a full diet for his family for 40 per cent of his income. This plan would automatically include most people who need help.

NEED FOR FARM PRODUCTS IS STABLE, BUT DEMAND IS UNSTABLE

The basic per capita need for food remains relatively constant from year to year, and even over considerable periods of time. The total need for food in the United States, therefore, increases slowly at about the same rate as the increase in population. The population of the United States is increasing at a declining rate. The rate of increase in population has declined from about 3 per cent per year in the decade of the 1870's to less than 1 per cent per year at present. The rate is expected to continue to decline in the future, until it reaches zero (the population remains stable) by about 1960 or 1970.[9]

Figure 7 shows that total agricultural production in the United States has increased by decades from 1870 to 1930 at about the same rate as population in the United States has been increasing. Since 1930, however, the increase in agricultural production has begun to outstrip the increase in population. This disparity is likely to increase gradually in the future, as population growth begins to level off. Thus the prices of farm products are likely to decline, unless the per capita demand for food increases.

What are the chances that the per capita demand for food will increase?

Apparently, the chances are not very good. Table 2 and Figure 6 showed that higher income groups eat more food than low income groups, and that increasing the purchasing power of the low income groups could be expected to increase their consumption of food. But the table and chart also showed that the increase in consumption is much less than proportional to the increase in income. It increases only about one-fifth as much as income increases. The BAE concludes that even if full employment exists in 1950, prospective improvements in agricultural technology will increase agricultural production so that the total demand can be satisfied by the production from about 7 per cent less acreage than is under cultivation at the present time.[10]

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[8] H. M. Southworth and M. T. Klayman: *The School Lunch Program and Agricultural Surplus Disposal,* BAE, USDA, Misc. Pub. No. 467, 1941.

[9] Warren S. Thompson and P. K. Whelpton, *Estimates of Future Population of the United States, 1940 to 2000.* National Resources Planning Board, August, 1943.

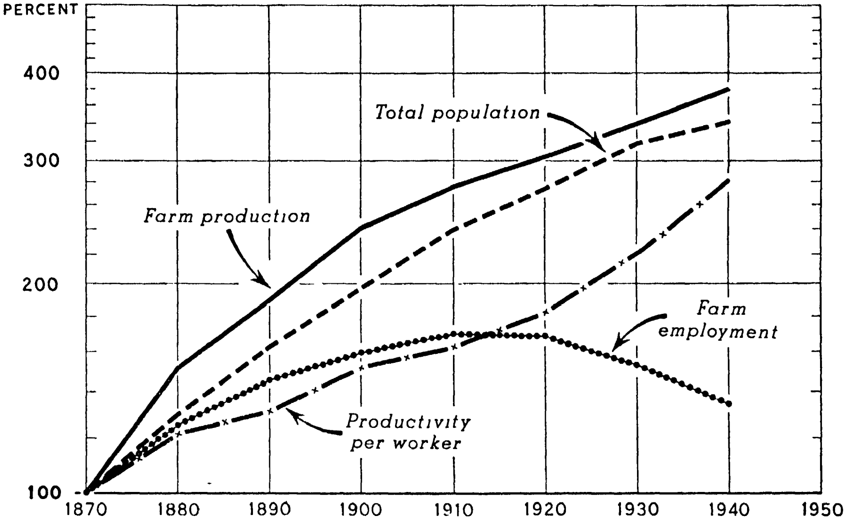

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FIG. 7.—Farm production, farm employment, farm labor productivity, and total population, United States, 1870-1940. (Index numbers, 1870 = 100).

This does not mean that agricultural production will be less profitable than it was in normal peace times before the war. The improvements in technology will lower costs as well as prices. Thus if employment remains high, the slow increase in supply relative to the demand will to some extent be offset by lower costs of production.

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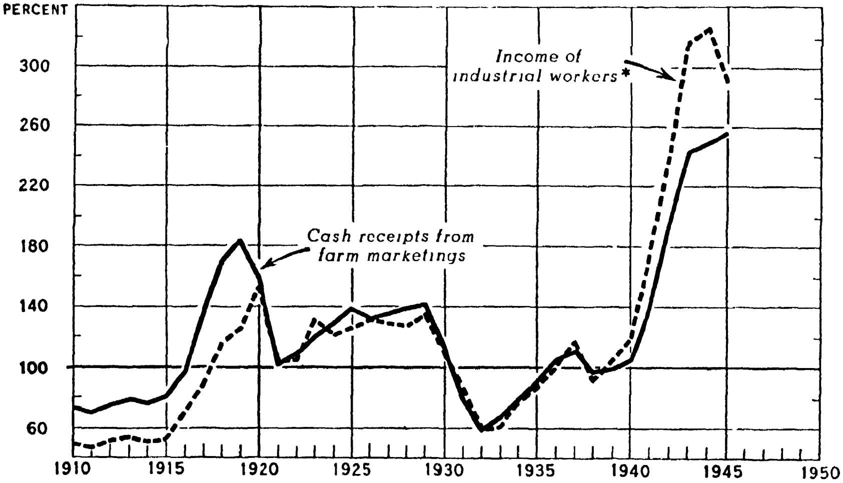
[10] *What Peace Can Mean to American Farmers*, BAE, USDA, Misc. Pub. No. 562, 1945, p. 20.

THE DEMAND FOR FOOD IS UNSTABLE

The most important feature of the total market for farm products in the United States today, however, is not the stability of the need for farm products but the instability of the *demand* (desire plus purchasing power). This demand for food and fiber, expressed in terms of dollars and cents, is very unstable. It fluctuates severely with fluctuations in industrial activity. Figure 8 shows the close relation between the income of industrial workers and the cash income from farm marketings.



*MANUFACTURING MINING AND RAILWAY DATA FOR 1945 ARE TENTATIVE ESTIMATES

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FIG. 8.—Cash income from farm marketings, and income of industrial workers, United States, 1910 to date. (Index numbers, 1935–39 = 100).

It is evident that the *demand* for farm products depends closely upon the buyers' incomes, and that these incomes vary greatly with variations in industrial activity. National policies aimed at keeping employment stabilized at a high level may attain their goal in the future; but until they do succeed, farmers need to plan their production programs with a weather eye on the fact that the demand for their products may fluctuate severely and give them much lower incomes than they expected when they started production.

CHAPTER 3

The Supply of Farm Products

The bulk of the food and fiber consumed in the United States is produced in the United States. The total production of the various foods and fibers during recent years is shown in Table 6.[1] From 1935

TABLE 6

PRODUCTION OF MAJOR AGRICULTURAL COMMODITIES, UNITED STATES, AVERAGES 1935–39, 1943, AND ESTIMATED PRODUCTION REQUIRED IN 1950 UNDER FULL EMPLOYMENT

Commodity	Unit	Average 1935–39	1943	1950	
				Estimated Production	Percentage of 1935–39
Livestock products:					
Beef and veal (dressed weight)	Million lb.	7,974	9,678	9,975	125
Lamb and mutton	Million lb.	871	1,107	1,010	116
Pork (excluding lard)	Million lb.	7,337	13,371	12,135	165
Eggs (number, farm and nonfarm)	Million doz.	3,335	4,965	4,330	130
Chickens (dressed weight)	Million lb.	2,325	3,821	3,600	155
Turkeys (dressed weight)	Million lb.	350	466	720	206
Dairy products (fluid milk equivalent)	Million lb.	103,656	117,689	128,400	124
Wool (grease basis)	Million lb.	425	448	465	109
Crops:					
Corn	Million bu.	2,316	3,034	2,875	124
Wheat	Million bu.	759	841	785	103
Rice	Million bu.	50	65	50	100
Soybeans	Million bu.	56	193	180	321
Flaxseed	Million bu.	11	52	25	227
Peanuts	Million lb.	1,229	2,185	1,820	148
Sugar (raw)	1,000 tons	1,948	1,496	2,160	111
Potatoes	Million bu.	359	465	350	97
Dry beans (cleaned)	1,000 100-lb. bags	13,606	19,431	15,200	112
Truck crops	1,000 tons	14,533	15,777	19,200	132
All citrus fruit (fresh equivalent)	Million lb.	8,438	12,610	13,800	164
All other fruit (fresh equivalent)	Million lb.	18,198	16,072	20,350	112
Cotton (lint)	1,000 bales	13,149	11,427	13,500	103
Tobacco (farm weight)	Million lb.	1,460	1,403	2,127	146

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[1] Tables 6 to 8 are reproduced from *What Peace Can Mean to American Farmers*, USDA Misc. Pub. No. 562, 1945, pp. 12, 15, and 18. In these tables, the estimates for 1950 are based on assumptions described in the text of that bulletin; they are not forecasts.

to 1939, the total value of the food and fiber produced on farms averaged about 9 billion dollars a year. During the recent war, agricultural prices doubled and production increased, so that the total value of agricultural products rose to 21.8 billion dollars in 1944.[2]

AGRICULTURAL IMPORTS

Some foods can be produced so much more efficiently in other countries that it is obviously sensible to import them in exchange for other goods that we produce in excess of domestic needs. The United States is obviously better off to import coffee and bananas, for example, than to try to raise them domestically. About 2.2 billion dollars worth of food and fiber annually were imported into the United States in 1925–29, and about 1.2 billion dollars worth in

TABLE 7

AGRICULTURAL IMPORTS OF SELECTED ITEMS, UNITED STATES, AVERAGES 1925–1929 AND 1935–39, AND ESTIMATES FOR 1950 UNDER FULL EMPLOYMENT *

Item	Unit	Average 1925–29	Average 1935–39	Estimate 1950
Sugar †	1,000 tons	4,301	3,018	4,400
Molasses	Million gal.	263	242	750
Fats and oils (excluding butter)	Million lb.	1,716	2,239	1,925
Meat products	Million lb.	156	262	300
Dairy products (fluid milk equivalent)	Million lb.	1,329	752	750
Feed grains	Million bu.	2	38	40
Hides and skins	Million lb.	450	288	600
Wool, apparel	Million lb.	128	86	400
Wool, carpet	Million lb.	148	138	200
Cotton	1,000 bales	398	185	200
Tobacco ‡	Million lb.	76	60	75
Jute and jute butts	1,000 tons	83	70	125
Sisal and henequen	1,000 tons	123	130	175
Abaca	1,000 tons	61	42	75
Flax and hemp	1,000 tons	8	6	10
Other fibers	1,000 tons	43	38	50
Bananas	Million bch.	60	59	75
Coffee	Million lb.	1,430	1,838	2,450
Cocoa beans	Million lb.	424	595	800
Tea	Million lb.	93	89	100
Rubber	Million lb.	1,002	1,150	1,150
Silk	Million lb.	85	63	25

* Including trade with the Philippines.

† Plus shipments from insular territories which are estimated for 1950 at about 2,600 thousand tons.

‡ Plus duty-free shipments from insular territories which are estimated for 1950 at about 22 million pounds.

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[2] *The Farm Income Situation,* BAE, USDA, June, 1945.

1935–39. Under conditions of full employment in 1950, about 2 billion dollars of agricultural imports could be expected. The breakdown by major items is shown in Table 7.

AGRICULTURAL EXPORTS

The United States can produce some farm products more efficiently than other countries, and produce more of them than the domestic market can absorb. About 1.9 billion dollars worth of food and fiber were exported in 1925–29, and about 0.8 billion dollars worth in 1935–39. Under conditions of full employment in 1950, about 2 billion dollars of agricultural exports could be expected. The break-down by major items is shown in Table 8.

TABLE 8

GROSS AGRICULTURAL EXPORTS AND SHIPMENTS TO TERRITORIES OF SELECTED ITEMS, UNITED STATES, AVERAGES 1925–29 AND 1935–39 AND ESTIMATES FOR 1950 UNDER FULL EMPLOYMENT*

Item	Unit	Average 1925–29	Average 1935–39	Estimate 1950†
Wheat	Million bu.	170	54	75–100‡
Rice (milled)	Million lb.	556	526	580
Lard	Million lb.	767	192	600
Other fats and oils (exclusive of butter)	Million lb.	263	97	60
Pork (dressed weight)	Million lb.	429	143	340
Other meat (dressed weight)	Million lb.	70	54	60
Eggs§	1,000 doz.	22,600	2,200	2,250
Dairy products (fluid milk equivalent)	Million lb.	547	352	500
Feed grains	Million bu.	75	52	60
Dry beans and peas (cleaned)	1,000 100-lb. bags	663	874	850
Fresh vegetables	Million lb.	43	113	130
Canned vegetables (fresh equivalent)	Million lb.	107	93	250
Citrus fruits (fresh equivalent)	Million lb.	339	562	800
Other fruits (fresh equivalent)	Million lb.	2,876	2,550	3,000
Cotton	1,000 bales	8,575	5,600	4,500
Tobacco (farm weight)	Million lb.	601	457	440

* Calendar-year basis, except for cotton, tobacco, rice, dry beans, and peas.

† Total value of exports and shipments (in terms of export prices) under full employment approximately 1.2 billion dollars. Export prices usually average about 25 per cent above the farm price level.

‡ This might exceed the United States quota under an international wheat agreement.

§ The sharp reduction in exports of eggs from 1925–29 to 1935–39 was due to the imposition by Cuba of a tariff in 1927 of 8 cents per dozen, which was raised to 12 cents in 1930.

These tables show that United States agriculture comes close to producing as much food and fiber as the nation consumes; in addition, the nation consumes most of the food and fiber that it produces. Nearly 10 per cent of agriculture's production is exported, but a little more than 10 per cent of the food and fiber that we consume is imported from other countries. Thus the nation as a whole is about 90 per cent self-sufficient with respect to food.

That is the situation for food as a whole. For a few individual foods, the country is much less than self-sufficient. It imports practically all of each product shown in the group of six products at the foot of Table 7—bananas, coffee, etc. And some of the export-commodity producers, such as cotton producers, depend heavily upon the export market for their particular product. What happens to the export market has drastic effects on these producers.

TOTAL AGRICULTURAL PRODUCTION IS RELATIVELY STABLE, BUT THE PRODUCTION OF EACH PRODUCT IS UNSTABLE

The total volume of agricultural production remains remarkably stable from year to year in contrast to industrial production. Figure 9 shows that the trend of agricultural production rises at the rate of about 1 per cent per year, but the fluctuations from one year to the next seldom exceed 5 per cent, and in most cases do not exceed 2 or 3 per cent.[3]

The chief reason for the stability of agricultural production is the fact that agriculture produces close to capacity all the time. It does not cut down to 25 per cent of capacity or less during depressions, as the steel industry, the automobile industry, and others did during the major depression of the 1930's. The reasons for this are that a very high percentage of farmers' costs are fixed, so that total costs are not much reduced by limiting production; reduction by any one farmer would in any case have no appreciable supporting effects on his prices; and even organized attempts to reduce production in the past have not met with much success.

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[3] The considerable expansion in agricultural production that took place during World War II was somewhat of an exception to the general rule of stability; it far exceeded any previous record. It resulted from a combination of several circumstances: the low levels of production just before the war, resulting from two severe drouths in 1934 and 1936; the use during the war of large stocks of grain and cotton that had been unintentionally accumulated from 1937 to 1941; the widespread adoption of hybrid seed corn and improved varieties of other grains; the stimulation provided by the patriotic urge to produce, by the doubling of agricultural prices, and by favorable weather during the war. It is unlikely that such a combination of circumstances will occur again.

THE PRODUCTION OF INDIVIDUAL FARM PRODUCTS IS UNSTABLE

The relative stability of total agricultural production, however, masks an extreme instability in the production of individual farm products, considered separately.

Most crops and products are subject to the hazards of drouth and flood, hail and wind, cold and heat, insects, disease, and occasional erratic changes in individual farmers' plans. For example, federally inspected United States hog slaughter dropped from 44 million head in 1933–34 to 31 million head in 1934–35, because the corn crop dropped from 2.4 billion bushels in 1933 to 1.4 billion in 1934. Hog slaughter stayed low for three years, then returned to high levels in two more years as corn production returned to normal. Cotton production jumped from 12 million bales in 1936 to 19 million bales in 1937, then fell to 12 million again in 1938. *Agricultural Statistics* is full of data showing the variability from year to year in the production of individual crops.

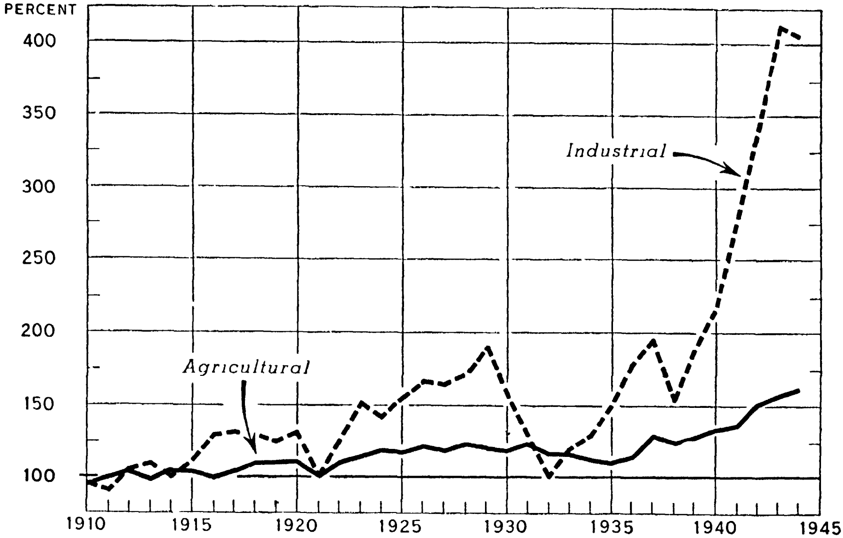

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FIG. 9—Volume of production: agricultural and industrial, United States, 1910-44 (Index numbers, 1910-14 = 100).

In addition to the irregular fluctuations in production that take place from year to year, cyclic fluctuations occur in the production of some farm products. Hog production has a marked tendency to move in cycles. When hog prices are high, hog production will increase for about two years, until that increase in production lowers hog prices; these low prices discourage hog production, and this decrease in production raises hog prices; these high prices increase hog production, and so on.

Finally, most farm products are produced seasonally. They come on the market in greatest volume in certain seasons of the year and in only small volume, or not at all, in other seasons. If the crops are durable, such as cotton or wheat, they can be put into storage and sent to market fairly evenly through the year; if they are perishable, like most fruits, they must either be canned, frozen, or otherwise made less perishable, or else consumed heavily at the time of harvest, and in smaller quantities during the rest of the year.

Total agricultural production remains stable in spite of these violent fluctuations in the production of individual crops because the United States is large, and the weather varies differently in different parts of the country. One crop grows well, under favorable weather, at the same time that another crop in a different part of the country is struck by drouth. Thus, during the same years (1934–36) when drouth reduced the corn crop and hog slaughter a third or more, the production of wheat declined only slightly, while beef slaughter actually rose, and the production of oil-bearing crops, truck crops, and vegetables also increased. Ordinarily, the fluctuations in the production of the different crops cancel out to a large extent. That is why total agricultural production remains so stable—not because the production of each crop remains stable, but because the variations in the production of different crops largely cancel each other.

EFFECTS OF UNSTABLE PRODUCTION

Consumers, therefore, fare pretty well from year to year so far as total food intake is concerned. The total consumption of food closely follows the total production of food. It has to. Consumers can't eat more than is produced, nor will farmers sell less. Total production remains fairly stable from year to year, so total consumption does too. A shortage of one food is usually offset by a surplus of another, and foods are interchangeable enough so that no great damage is done to consumers' diets or palates.

It is farmers, as producers, who are affected most by fluctuations in individual crop production. They are pretty well specialized as producers; each farmer raises only one product, or a few related products, and a partial or complete failure of that particular crop directly affects the quantity that he can sell.

The effects on a farmer's total income, however, are different from the effects on the quantity that he sells. Fluctuations in yield ordinarily cause opposite fluctuations in prices. When production goes down, the price goes up. The effects of this inverse relation between production and price differs from crop to crop.

When the demand remains stable, a reduction of 20 per cent in the size of the corn crop, for example, puts corn prices up about 30 per cent. The total income from this small crop, therefore, is $\frac{80 \times 130}{100} = 104$ per cent of the income from an average crop. That is, a crop that is 80 per cent of average size is worth 4 per cent more than an average crop.

A large corn crop, however, is worth a good deal less than an average crop. The total income from a crop 20 per cent larger than average size is $\frac{120 \times 70}{100} = 84$ per cent of the income from an average crop. Thus in the case of corn, the inverse relation between changes in production and price keeps the total income from small crops almost the same as for an average crop. But a large crop *decreases* the total income by almost the same percentage as the increase in the size of the crop.[4] The same thing is true of hogs, which consume about half of the corn crop.

The normal inverse relation between production and prices, therefore, only partially stabilizes total income and this partial stabilization applies only to the total income received by the producers of a crop as a group. It applies to individual farmers' incomes only if the yields on all the farms producing a given crop varied alike. The rub comes in the fact that yields on all farms do not vary alike. One farmer may have a good yield in a year when most other farmers have poor yields and cash in on his high yield at good prices; next year the situation may be reversed. The inverse relation between production and prices helps to stabilize incomes to the producers of a crop as a group, but it leaves the individual farmer still exposed to an uncertain yield and income on his individual farm.

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[4] The relation between changes in production and price is called the elasticity of the demand. This elasticity is computed by dividing the percentage change in quantity by the percentage change in price. Thus the elasticity of the demand for corn is $\frac{20}{30} = 0.66$. Other products have other elasticities, and changes in production, therefore, have other effects on total income. The technical, statistical, mathematical, and economic problems involved in measuring elasticity are discussed fully in Part II of *Agricultural Price Analysis*, Iowa State College Press, 1941, by the present author.

Since 1933, the Commodity Credit Corporation has been engaged in a commodity loan and storage program designed to stabilize the market supplies and prices of the so-called "basic" products—cotton, wheat, corn, tobacco, rice, and peanuts. Under these programs the excess over average production in good crop years is removed from the market supplies and put into storage, to be taken out to add to supplies later on in poor crop years.

To the extent that these programs attain their objectives, they stabilize prices from year to year against fluctuations in production. This, however, does not stabilize incomes. Without a program of this sort, as shown above, big crops are worth less than average crops. With the program, big crops are worth more than average crops, and small crops are worth less.

With or without a price stabilization program, individual farmers' incomes are still affected by variations in the crop yields on their individual farms. One farm or group of farms may be struck by drouth, hail, or flood in the same year when other farms are blessed by timely rains. In order to protect farmers against this kind of income instability, federal crop insurance programs have been set up for cotton, wheat, and corn. These programs offer insurance to individual farmers against variations in crop yields on their farms.

BRIDGING THE GAP BETWEEN PRODUCER AND CONSUMER

We have on the one side, therefore, a fairly stable *need* for farm products in the United States, but a very unstable demand. And on the other side, we have a fairly stable *total production* of farm products, but a very unstable production of individual crops and livestock products, varying irregularly in some cases and cyclically in others. The United States is like a vast market hall, with hungry consumers at one end of the hall shouting their orders for food and continually changing their minds about the prices they can afford to pay; and at the other end of the hall, harried producers dashing in and dumping continually varying kinds and quantities of goods on the counters for sale. All the elements of bedlam are here. Yet somehow the goods move through the market, producers get their money, and consumers get their food.

To bridge the tremendous distances between agricultural producers and consumers in the United States, to smooth out the irregular flow or to keep a succession of irregular flows of different products meshing in with one another over periods of time, and to set and reset prices continually so that consumers will never lack suppliers at those prices, and vice versa, a huge and complicated marketing system has developed over the years. This system is not the sort of thing that gradually improves until it reaches perfection. Rather, it goes through a continuous evolutionary process in an environment that is continually and rapidly changing. As fast as the system changes to adapt itself to a change in the environment, the environment already is changing to something else again. The system is always a jump or two behind, in a stage of transition from what was needed yesterday to what is needed today.

A description and appraisal of a marketing system, therefore, needs to be phrased not merely in terms of the present but in terms of the recent past that gave the system its present form. An analysis of the present agricultural marketing system of this sort is given in the next chapter.

CHAPTER 4

The Marketing System That Brings Supply and Demand Together

The agricultural marketing system has been rapidly changing during the recent past. No doubt it will continue to change, perhaps even more rapidly, in the near future. There is nothing mysterious about the causes of these changes. They result from technological developments in transportation, communication, and preservation that set the pattern afresh from time to time.

THE TRADITIONAL LOCAL AND CENTRAL MARKET SYSTEM

The agricultural marketing system that developed as the railroad opened up the West after 1850 was based upon the methods of transportation and communication that existed then. The team and wagon was an efficient unit for handling small loads for short distances over poor country roads. Its small size and low speed, however, made it inefficient for long trips. These physical characteristics of the horse and wagon set the pattern of the country markets. They were local markets, small in size but large in number, located in small country towns. Each local market served a small territory with a radius of only a few miles.

The railroad was an efficient unit for hauling large loads for long distances at high speeds. The markets that developed as a result of these characteristics were the central markets, large in size and few in number, located at large cities and strategic transportation points.

The local markets and central markets complemented each other to form a fairly efficient system for getting farm products from producer to consumer. The local markets in the country assembled small quantities of farm products into carload lots for shipment to the central markets. The central markets concentrated those small quantities from the local markets into large quantities, for milling, packing, etc., and for dispersion to smaller wholesale and retail markets in the consuming areas.

The prices in the central markets were linked to one another, so that relative prices could not fluctuate (except for short intervals) more than the additional cost of getting goods, not so much from one market to another, as from one supply area to this or that other market. For some commodities, such as wheat, that were durable, capable of standardization, and of high specific value so that transportation costs were low, the central market system covered the globe.

The central markets were, and, to come to the present tense, still are often hundreds of miles away from the local markets that feed them. The producer or local dealer seldom accompanies his goods to the central market. The great bulk of the produce that flows to the central markets is consigned to the commission men located there. These commission men represent the seller. They make the best sale they can, deduct their commission from the proceeds of the sale, and remit the remainder to the farmer or local dealer who consigned the goods to them.

One of the shortcomings of the traditional local and central market system was the congestion that resulted from the concentration of large quantities of livestock, grain, cotton, etc., at the central markets. The vast area, the quantity of the equipment, and the manpower involved in the Union Stockyards at Chicago, for example, illustrate the size of the job of concentration at a large central market. They also afford some idea of the cost. This concentration of physical products facilitated price-making but it was an expensive operation that amounted to a considerable item of cost.

THE STRUCTURE OF THE AGRICULTURAL MARKETING SYSTEM IS CHANGING

After World War I, new developments in transportation and communication began to reduce the advantage of concentrating physical products at central markets. These new developments were (1) the great improvement that was made in motor trucks during the early 1920's (in its turn largely resulting from the perfection of the heavy pneumatic tire), (2) the rapid extension of concrete highways over the countryside, and (3) the invention of the radio.

The first two of these changes reduced the cost and improved the speed and reliability of the short haul movement of goods to market, until that short haul movement became as fast and efficient as the long haul movement of goods by railroad. Goods could be assembled and dispersed at the markets in small towns or cities out in the country in large enough volume for efficient processing, and more cheaply and rapidly than at the great terminal or central markets in metropolitan centers. From the physical point of view, the marketing and processing job could be done as well at small cities in the country like Enid, Oklahoma, or Waterloo, Iowa, as at large cities like Chicago or Kansas City; and it could be done more cheaply. Accordingly, buyers and sellers began to short-cut the central market in considerable numbers and do their buying and selling direct at interior markets. The traditional central market began to give way to a more decentralized kind of market.

In addition to the truck and the cement highway, changes in freight rates had a decentralizing effect upon the slaughter and therefore upon the marketing of one important commodity, livestock. But marketing has become as much or more decentralized in the case of other commodities—grain, apples, truck crops, etc.—where changes in freight rates were unimportant.

The truck and the paved highway made decentralization of the handling of the product physically possible. By a coincidence, a third invention came along at the same time and made that decentralization economically coherent. This third invention was the radio. In its field, communication, it was a perfect parallel to the other two inventions in their field, transportation, for the radio was the perfect instrument for disseminating market news to the decentralized market. The truck and the concrete highway scattered "the market" over the whole producing area; the radio similarly scattered the *market news* over the whole area, right into the producers' homes. The one perfectly complemented the other.

The radio would not have been much use if there had been no market news to broadcast. The federal government was aware of the market decentralization that was taking place and alive to the potentialities of the radio. It vastly expanded its news-reporting service, using all three agencies—the press, the telegraph and telephone, and the radio. It did its best to decentralize its market news step by step with the decentralization of physical marketing.

The federal government marketing services also made great strides in commodity standardization. There is not much use reporting prices if there is no common language in which the different grades of the commodities concerned can be described. It does not help a country seller much to tell him that cattle are selling from $4 to $8 per 100 pounds at Chicago, or even to tell him that "good" cattle are selling from $6 to $7, if his idea of what "good" means differs from the reporter's idea. Along with the growth in the volume of market reports, therefore, went an increase in the accuracy and uniformity of the descriptions of different grades of the commodities whose prices and quantities were reported.

After 1920, the decentralized market rose to dispute with the central market for first place in many commodity markets, and in many foreign countries as well as in the United States. The rise was most evident in the case of livestock, grain, vegetables, and fruits in the United States. As market organization improved, grades were set up, and market information reached higher levels of accuracy and timeliness. The necessity for concentrating goods in central markets for physical inspection decreased, and fewer goods flowed through those central markets.

The extent of the change in livestock marketing in the United States is shown statistically in Figure 10.[1] The percentages of the different kinds of livestock sold direct on the decentralized markets differ, but one characteristic is common to all of them—the percentages have all more than doubled since 1923. More than half the hogs in the United States, a third of the calves and sheep and lambs, and a quarter of the cattle, are now sold direct.

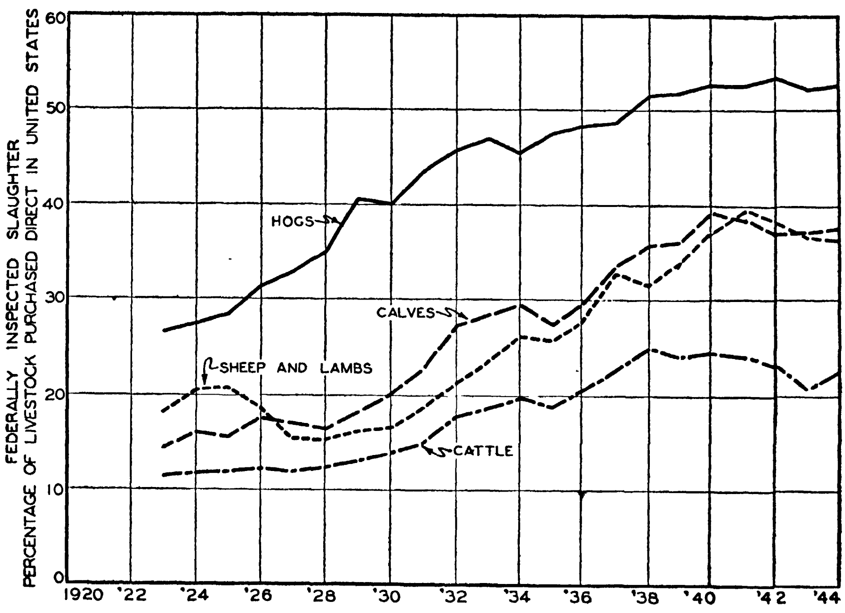

FIG. 10.—Percentages of livestock purchased direct in the United States.

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[1] The data for this figure are given in *Livestock, Meats, and Wool Market Statistics and Related Data, 1944* (processed), Agricultural Marketing Service, USDA, 1945, p. 38.

The channels through which the different species of livestock flow to market now in the most important livestock producing area, the Cornbelt region, are shown in greater detail in Figure 11. The central (terminal) market is still the most important single marketing channel, but it has declined in importance since 1920 until now only about half the livestock passes through that channel.

A similar change has taken place in grain marketing; statistics on the subject are scarce, but informed grain dealers estimate that more than three-quarters of the grain in the Middle West now moves direct, where formerly the bulk of the grain was consigned to a terminal market. The destinations of the shipments of corn in 1930-31 from a representative Iowa county, given in Figure 12, illustrate how the terminal grain markets have declined in importance. A similar evolution, almost rapid enough to be called a revolution, has taken place in butter marketing. In 1935, only 36 per cent of the butter in the United States moved through the central market wholesaler-jobber channel.[2] The same sort of thing was true of fruit and vegetable marketing.[3] In the case of apples, for example, "In New York state the growers sold more apples outright (i.e., direct) in 1932-35 than they consigned."[4] A similar situation exists in cotton marketing.

The process of decentralization has been accelerated by developments in chainstore wholesale and retail distribution. "Roughly analogous to the direct buying of hogs by the meat packers is the direct buying of fruits and vegetables by the larger grocery chains. The terminal wholesale commission on fruits and vegetables is commonly 10 per cent of the selling price. To this must often be added various cartage charges, amounting usually to another 3 or 4 per cent. Produce shipped or trucked to the chain warehouses direct from country points, of course, incurs none of these marketing costs. In an effort to retain part of this gain for themselves, the chains usually pay the grower or shipper a somewhat lower price to compensate for the fact that no marketing charges are deducted. Regardless of who gets the benefit, however, a saving in marketing costs has been effected.

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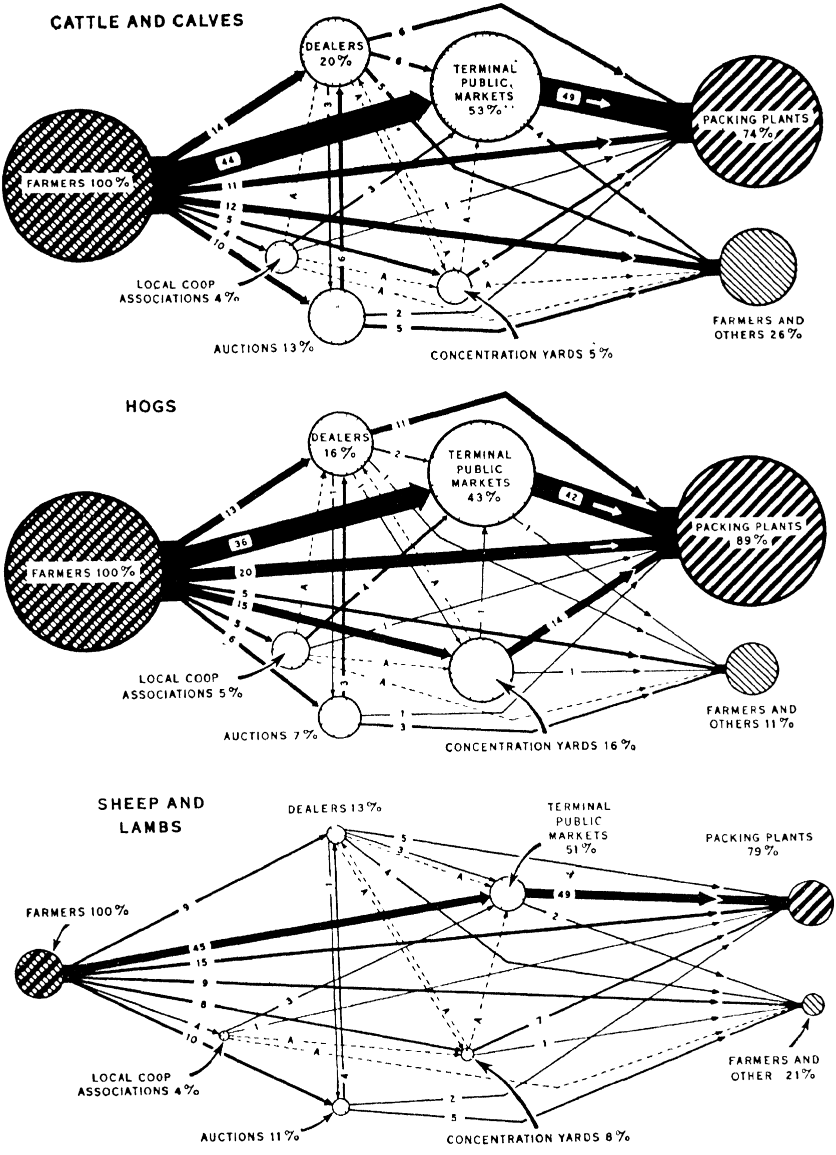
[2] See Chapter 18, "Reducing Butterfat and Butter Marketing Costs," for details.

[3] F. E. Clark and L. D. H. Weld, *Marketing Agricultural Products*, Macmillan, 1933, Chap. VI; H. H. Maynard, W. C. Weidler, and T. N. Beckman, *Principles of Marketing*, Ronald Press, 1927, pp. 154–61; J. H. Solomon, *Controlled Distribution of Fruits and Vegetables*, Craft Linotypers, 1935; L. M. Davis, "Fewer Open Market Butter Sales," *The Agricultural Situation*, USDA, July, 1937, pp. 19–20.

[4] G. P. Scoville, "Marketing New York Apples," *Journal of Farm Economics*, Vol. XIX, No. 4, November, 1937, p. 44.



- - A - - *Less than 0 5 percent* *Figures on lines are in percentage*

SOURCE CORN BELT LIVESTOCK MARKETING RESEARCH COMMITTEE

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Fig. 11.—Channels of livestock movement from farms in the Cornbelt region to packing plants, other farmers and other users, 1940.

"The economies achieved by means of direct marketing at the producer end of the marketing chain are of the same general sort as those resulting from the combining of wholesaling and retailing at the consumer end. In both cases the saving turns mainly on the elimination of the charges and commissions of middlemen whose services are no longer needed. This does not mean that a reduction in marketing costs equivalent to the margins formerly taken by these middlemen can be achieved, since the integrated distributor will have some compensating costs. One thing, however, is self-evident; namely, that many of the costs of the older system of food distribution arose out of the buying and selling operations which took place at every stage in the marketing process. It is through the reduction in the number of such transactions that mass distribution has realized its greater advantage."[5]

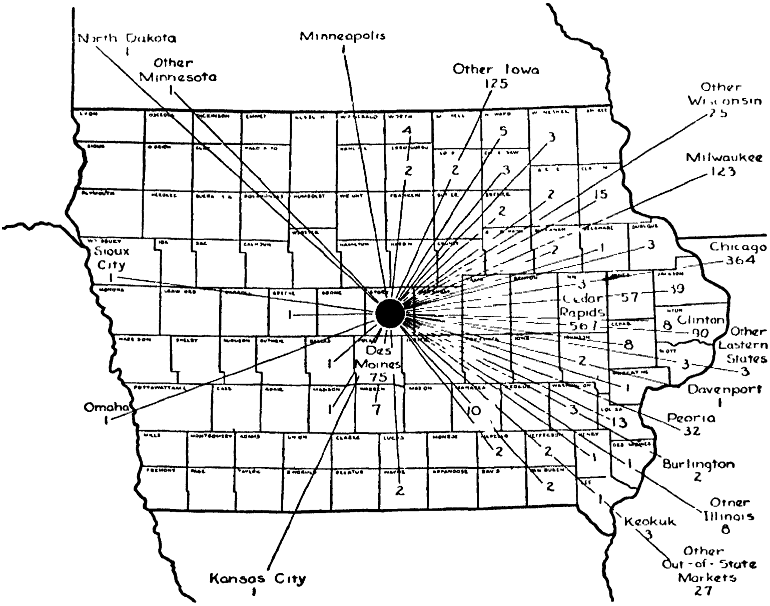

FIG. 12.—Destination of carlot shipments of corn from a representative Iowa county, 1930-31. (Figure reproduced from R. C. Bentley, "The Destination of Iowa's Commercial Corn," Iowa Agr. Exp. Sta., Bul. 318, 1934, p. 45).

The decentralized market is well exemplified in Denmark.[6] The bulk of the Danish hogs for many years has been sold direct by farmers and slaughtered at local packing plants all over the producing territory. Hogs in Denmark are not concentrated at a few large central markets for sale and slaughter, as they were in the United States before World War I and still are, to a smaller extent, today. Neither is there any dominant central market for the wholesale meat, as there is at the Smithfield market in London; the bulk of the carcasses and cuts move from the plant direct to the wholesale buyer. There is still a central market at Copenhagen where buyers, sellers, and product are brought together, but it has declined to a position of insignificance compared with the broad decentralized market. For the great bulk of the product, the buyers and sellers stay at home, hundreds of miles apart, and transact their business with each other by telephone or telegraph.

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[5] Monograph No. 35, A. C. Hoffman, *Large-Scale Organizations in the Food Industries,* Temporary National Economic Committee, GPO, 1940, pp. 73–74.

[6] *Livestock Marketing Methods in Great Britain, Denmark, and Canada,* Iowa Agr. Exp. Sta., Bul. 353, 1937, p. 128, by the present author.

Thus, as the result of specific technological developments in transportation and communication, a new intermediate type of market has partially replaced the traditional local and central market. In these intermediary markets, not only do the physical goods short-cut the central markets; the market news and the process of price determination short-cut them too. The new intermediate markets, instead of being articulated vertically, as it were, with the central markets (both in flow of goods and prices) are articulated horizontally with each other; they are as likely to lead the central markets now as to follow them. The "concentration, equalization, and dispersion" of the physical goods that used to take place at the central markets is now spread all over the country, and the price-determining and title-transferring process is spread along with it.

It used to be true that "the great wholesale reservoirs perform an indispensable equalizing process."[7] But nowadays the major part of the stream of agricultural commerce by-passes those reservoirs; it flows more directly from producer to consumer. Numerous smaller reservoirs upstream from the central reservoir now take care of most of the floods, and in so doing reduce the size of the job. Less concentration and dispersion are needed, for much of the water is dispersed before it ever reaches the central reservoir; the traditional central market structure is giving way to the decentralized market structure of modern times.

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[7] Clark and Weld, *op. cit.*, p. 13.

CHAPTER 5

The Two Parts of the Price-Making Process

We have described very briefly the evolution of the physical markets in which price-making forces operate today. Now let us see how the price-making forces work themselves out in these markets.

The price-making process consists of two parts: (1) the determination of the value of *the commodity* at the particular time and place, and (2) the determination of the value of the *particular lot* of the commodity being sold relative to other lots of the commodity.

The buyer of a product, such as a local elevator man buying wheat, is therefore confronted with two price problems. The first problem relates to the price of wheat for the day. What price will he post in his office this morning? Yesterday he posted 90 cents a bushel. Today the market has strengthened; shall he post 91 cents, or 92 cents, as his price for wheat?

The second problem is different; it relates to the price for each separate load of wheat as it comes in. Here is a load from John Smith. It is damp, a considerable percentage of the kernels are off color, and some of them are cracked. How much is it worth compared with Bill Jones' load, which is clean, dry, and bright red in color? Is it worth 80 cents, 85 cents, or 90 cents?

These two problems or parts of the price-making process are distinct and separate. The one part calls for an appraisal of the changes in demand and supply of different classes of wheat from day to day, and the determination of the price that will be paid for each class (each class is really a different commodity). The other calls for an appraisal of each lot of wheat as to its moisture content, protein content, color, weight, etc., and the determination of how much will be paid for that lot.

Wheat is used here only for illustration. These two parts of the price-making process are present no matter what the commodity may be. The two parts are so distinct that in any business large enough to permit the necessary division of labor, they are handled by different men. In a meat-packing plant, for instance, the first part, the determination of the price of *hogs,* is handled by the head buyer in the main office. Each morning he sizes up past and prospective receipts, holdovers, and prices at other markets as well as his own, and then telephones down to the yards to the buyers, for example, "Take a dime off the board," i.e., lower hog prices 10 cents per 100 pounds; or, "Put on 15 cents," i.e., raise prices 15 cents per 100 pounds. The second problem, that of appraising *particular lots of hogs,* is handled by the buyers out in the yards. They size up each lot of hogs as it comes in; and for each lot, they decide whether to pay near the top, middle, or bottom of the range of prices for that class of hogs that day.

(1) DETERMINING THE VALUE OF "THE COMMODITY"

In the primitive markets of early times, where goods were unstandardized, they were necessarily sold on the basis of inspection. The quality of the goods was difficult to ascertain, even by firsthand observation. The two parts of the price-making process were mixed in together, (1) determining the value of the commodity, cattle for example, and (2) determining the value of the particular lot of cattle. The structure of the market was very simple, but the price-making process was tedious and inaccurate; the waste of time and energy was very great.

Anyone who has purchased a rug or a brass bowl in the present day primitive markets of Turkey or China, for instance, knows that the seller automatically asks twice or three times what anything is worth; the buyer as automatically offers half or one-third; and a long period of careful inspection of the product and haggling over the price ensues before the sale is made.

The local and central market system that superseded the primitive markets was a great step forward in marketing efficiency. At the central market, the forces of supply and demand were brought into sharp focus; the price of the product was readily established. The second part of the price-making process (determining the value of each lot of the commodity, and attaching a definite price to it) could also be done with reasonable accuracy, since each lot of goods was physically present and was exposed to a reasonably large number of buyers.

The price recorded at the central market was "the price" of the commodity. In the Corn Belt before World War I, for example, the saying was, "Chicago sets the price of hogs"; the Chicago price was regarded as the basic price. The price of hogs in local markets tributary to Chicago was simply the Chicago price minus the cost of getting the hogs to Chicago.

In order for a central market price to represent "the price" of the commodity satisfactorily, several conditions must exist: (1) the volume of trading at the central market must be large enough to constitute at least a representative sample of the trading in the commodity all over the tributary area; (2) the prices at central market must be reported accurately; and (3) these price reports must be disseminated currently over the tributary area. In addition, the grades for which prices are quoted must be well understood, and the grade differentials should be predictable with a fair degree of accuracy. How well did the central markets for the different commodities measure up to these requirements?

The livestock and grain markets were reasonably satisfactory on the first one of these counts—the adequacy of their volume of trading. Up to the time of World War I, at least, the bulk of the total livestock slaughtered flowed through Chicago and the other central markets. The situation in the cash grain trade was similar. Moreover, more than 85 per cent of the total trading in grain *futures* contracts was conducted on the chief terminal market, the Chicago Board of Trade.

The other requirements (accurate and widely disseminated price reports) were met well in some markets and not so well in others. A considerable extension of government price reporting was made at about the time of World War I, and shortly thereafter. The prices at the central livestock markets were reported by government market men, who moved about the yards, talking with buyers and sellers and assembling their information into reports that were given wide publicity by telephone, telegraph, and press. On the grain exchanges, the prices at which sales were made were posted on the board from minute to minute and reported by wire and press all over the country. After the passage of the Grain Standards Act of 1916, grain was graded according to objective standards by impartial government graders, so that the prices for the different grades referred to grain of definite and uniform specifications.

In the poultry and egg trades, one weak point existed. It was difficult to get accurate price quotations at the central New York City market. Individual dealers had followed the practice of sending out price sheets to their customers, but since the dealers were interested parties, their price quotations were not above suspicion. Accordingly, Benjamin Urner, the printer who printed most of these price sheets, decided about 1860 to publish a sheet himself, based upon his own impartial observations. His sheet became popular with customers on account of its impartiality, and with the dealers because of its low cost. This impartial sheet served as a very satisfactory source of price quotations for many years.[1]

The butter and egg trade showed the effects of decentralization early in the history of the trade. So much butter was sold direct, off the central market, that the validity of the central market price as a basis for settlement was called into question, even as early as 1896. Various attempts were made at different times after 1900 to improve or ensure the representativeness of the central market quotation. One was the adoption of the "call-board" method. This involved bringing buyers and sellers together on the trading floor at a designated time to make open bids and offers, which were then quoted as the basis price. Another was the price quotation committee method, under which a committee of dealers would get together and issue quotations which purported to represent market prices. This price quotation committee system, however, has at times been abused; the problem of accurate butter price quotations is still unsolved.

The market reporting system today is still a jump or two behind the decentralized market. It is still predominantly a *terminal market* reporting system. The one clear case where the decentralized market is well reported—the livestock market in Iowa—falls short of its greatest usefulness; the system is hampered by the tradition that no prices may be reported for individual firms; the prices are therefore reported only by areas.

PRICE-DETERMINING COMMITTEES AND "NEGOTIATED PRICES"

What Nourse calls a more sophisticated[2] stage of market price determination in either central or decentralized markets has been reached in the case of a few commodities. In these cases the determination of the price of the commodity is taken out of the hands of the individual traders altogether. It is turned over to a central committee which determines not what prices are being paid by dealers (which is the function of a quotation committee described above), but what prices dealers must pay.

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[1] Clark and Weld, *op. cit.*, p. 343.

[2] Speaking with respect to milk price agreements, Nourse explains his use of this term as follows: "The point which we wish to make is that the price-making method here has, under the exigencies of market development, departed far from any 'natural' competitive relationship between the supply of a given parcel of milk on a particular farm and the individual housewives, restaurateurs, or others who become the ultimate buyers. It will be noted that prices have been given a conventionalized character, thoroughly artificial in terms of any direct bargaining between individual producers and individual consumers such as would simply 'clear the market' from day to day. This conventionalizing and sophisticating of prices is, however, distinctly purposive and designed—however ineptly as yet—to effectuate a permanent supply of milk of desirable quality and to establish fixed and liberal habits of consumption of a high quality product on the part of consumers." E. G. Nourse, *Marketing Agreements Under the AAA*, Brookings Institution, 1935, p. 347.

When a price-determining committee is set up, no change takes place in the structure of the market, but the machinery for price determination is changed. Prices are set, not by the unregulated forces of supply and demand operating through the interplay of hundreds of buyers and sellers all over the market, but by a single committee, representing the buyers and sellers, brought together in one room.

The committees in some cases (such as the Danish hog price committee) merely set a price for the coming week which will in their judgment clear the market for the week. In those cases the price is the same as the unregulated supply and demand price, but with the small day-to-day fluctuations taken out. In other cases, the committee goes further. It takes hold of the supply, by various means—sliding scale tariffs, production regulations quotas, etc.—as in the case of the Norwegian government grain monopoly. In some of the British marketing schemes, it sets the price at some other level than the unregulated supply and demand price. The price committee system then results in what may be called "negotiated prices."

In the United States, the price committee system has found its greatest expression in the field of milk marketing.[3] In this field, the system functions much as is does in Europe. The committee exerts some influence on supply by setting up inspection provisions, quotas, etc. The price committee system is also being used in California with various specialty crops. A special adaptation of the price committee idea is the federal commodity loan program, under which the Commodity Credit Corporation has been making non-recourse loans[4] to farmers on cotton, wheat, corn, tobacco, rice, and peanuts, at rates set at first by the USDA, and more recently by legislation. These loans in effect set the market price at about the level of the loan rates.

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[3] In the case of milk, the price plan (the method by which the committee determines prices) has attracted more attention than the price committee itself. The development and present status of these milk price committees and plans are discussed in Chapter 18.

[4] These loans are non-recourse in that if the market value of the commodities pledged under loan declines below the value of the loan, the Commodity Credit Corporation simply takes over the commodities without requiring the farmer to make up the difference.

(2) DETERMINING THE VALUE OF "A PARTICULAR LOT" OF THE COMMODITY.

In the primitive single-market system of an earlier day, the buyers, the sellers, and the physical goods themselves were concentrated at one point. The buyers and sellers passed from one lot of goods to another, comparing and contrasting, and making up their minds what each lot of goods was worth. An endless amount of time was spent in "higgling and bargaining," and in bringing the goods to the market in the first place and hauling them away afterwards; but since the physical goods, buyers, and sellers were all present at the same spot, the necessary comparisons of goods, bids, and offers could be made without recourse to verbal description. The eye and the hand were adequate for appraising the different lots of goods, and the tongue and the ear were all that were needed to make and receive or reject the price of "this lot" or "that lot." The goods were sold by the primitive bed-rock method of personal inspection, and no description other than "this" or "that" was needed.

After the industrial revolution and the invention of the railroad, steamship, telegraph, and telephone, the single-market fairs were replaced by a system of local and central markets. The prices at the different local and central markets could be compared by means of the telegraph and telephone, but there was no way of comparing the goods for which these prices were paid. The markets were often hundreds of miles apart. The buyers and sellers could not move from market to market inspecting the goods in person as they used to move from lot to lot in the old-fashioned single-market fair. Nor could the goods be moved from market to market; the distances were too great.

Unless the markets were to remain isolated single markets, with goods selling at one price in one market and at another price in another market, some way had to be found to describe the different lots of goods in words that could be conveyed over the telegraph or telephone along with the prices. If Mahomet could not go to the mountain, nor the mountain to Mahomet, some way had to be worked out to describe the various mountains to the various Mahomets in words that they all could understand. When distances become too great for buyers to inspect the different lots of goods in person, sale by inspection has to give way to sale by description;

and that requires that a uniform and accurate descriptive language be evolved.

NEED FOR STANDARDIZED GRADE SPECIFICATIONS

During the past twenty-five years, with the advent of trucks, paved roads, and radios, the need for the concentration of the physical goods at central or terminal markets has lessened, and the need for a more and more accurate language for describing goods at a distance has still further increased. The prices can be broadcast to all buyers and sellers, enabling price comparisons over the entire market area. The goods themselves cannot be broadcast, but their descriptions can. The emphasis has shifted more and more from trading by inspection to trading by description, and more and more accurate and uniform descriptive terms have had to be evolved.

Obviously a million different lots of goods cannot be described individually, lot by lot. They must be classified into a small number of classes, and described merely by reference to their place in this classification. This requires first, that the most important value-determining characteristics of each kind of good (cotton, or wheat, etc.) be determined, and second, that a set of specifications of these several characteristics be set up in such a way that each lot of goods can be placed somewhere in that set of specifications.

The set of specifications for each product starts at the top with the attributes that give the product the greatest value in the market. It ends at the bottom with those that give the product the least value. The set as a whole is divided into perhaps half a dozen or some such small number of divisions; each division is called a grade, and is given a number or word. This saves words, for buyers and sellers can then refer to "No. 1" or "No. 2" instead of listing the full description of each grade.

The use of this set of grade specifications enables a local elevator man, for example, to classify loads of wheat into different groups (grades) according to the attributes given in the specifications. His job thus becomes a matter of determining physical characteristics. If a load of wheat grades No. 2 (has the attributes laid down in the specifications for No. 2), then it is worth so many cents a bushel less than a load that grades No. 1; how many cents less is shown by reference to the prices quoted that day for the different grades.

This illustration has been phrased in terms of the buyer, but it is evident that grading equally simplifies the job of the seller. This is particularly true if the buyers all agree to use one uniform set of specifications. In that case the seller can directly compare the prices for each grade quoted by one buyer with the prices quoted for the same grades by another buyer.

If the set of specifications is phrased in such terms as "heavy," "damp," etc., the grading depends to a large extent on the judgment of the grader. It is subjective; that is, it depends upon the judgment of the subject who is doing the grading. If, however, the specifications are laid down in definite objective numerical terms—"60 pounds to the bushel" instead of "heavy," or "15 per cent moisture content" instead of "damp"—the grading then becomes objective; it depends only upon the attributes of the object, not of the subject. If there is any difference of opinion as to the grade of a load of grain, it can be settled by objective measurement tests, not by argument over a matter of opinion.

Many commodities have attributes which cannot be measured objectively, and in any case there is always a question whether the buyer, an interested party, can be expected to do the grading strictly impartially. So in some cases it has been found advisable to put the grading in the hands of an impartial third party, such as a government grader. This promotes satisfaction all along the line. The seller then knows that if he has canvassed the available bids and selected the highest price, he is getting the full value of his load. If it was graded No. 2 it was actually No. 2, not merely called No. 2 by the local buyer in order to enable him to buy it cheaply. He and the distant buyer have been able to talk the same trade language, agree on prices, and exchange goods with the minimum of wasted energy and the maximum of accuracy and efficiency.

PERSPECTIVE VIEW—THE GRADUAL ELIMINATION OF WASTED ENERGY

The evolution of the price-making process appears in perspective as a gradual process of reducing the time and energy spent or wasted in price determination and of increasing the accuracy of the prices.

It is obvious that a great amount of time and energy was wasted in "higgling and bargaining" in the primitive markets of early times. Even in modern times, in a primitive Eastern market a buyer and seller may spend hours in bickering over a price that in modern markets would be struck in an instant. In the comparatively modern central market, the waste of time is reduced to a considerable extent. The job is concentrated into a few expert hands, and central market price and receipts information is readily available. But central markets are handicapped by the high cost of the transportation and handling associated with the tremendous physical concentration of the goods in small congested areas. Less energy is spent in price determination, but more is spent in the concentrating of the physical goods.

In the modern decentralized market, the costs of transportation and handling are less, because the degree of physical concentration of the goods is less. But until the advent of the radio, the cost of the "higgling and bargaining" (by telephone) was high; or, if slower methods of communication were used, the effectiveness of the process was impaired. The radio, however, broadcasts market information to producers at no cost to themselves (other than the cost of the receiving set, which they buy partly for entertainment anyway) and thereby reduces the cost of the trading considerably. It also reduces the necessity for "higgling and bargaining," because the market information is broadcast in considerable detail; and the more comprehensive the market news is, the less need there is for argument about the price of particular lots.

In the most highly developed type of decentralized market, the waste of energy in trading is still further reduced. The commodity is graded and standardized so that the price-making process for each lot of goods is reduced more or less completely to a grade determining process. The more objective these grades are, the more is this process of grade determination expedited. Perhaps the most expeditious method of all is to place the grading process in the hands of an impartial third party, such as a government grader. There is then only one part of the whole trading process left to be argued about. That part is the determination of the price for the commodity in general, i.e., "today's price" for hogs, or corn, or whatever the commodity is. And if this is posted publicly at the market place, there is not much room for argument left; the seller simply brings his product in or takes it somewhere else.

The final step in the elimination of wasted energy is the price committee system referred to earlier. This committee system removes the last source of "higgling and bargaining" in the market place—the determination of "today's price" for "the commodity." It does not eliminate this determination. It merely removes it from hundreds of scattered points in the decentralized market to one focal point; it eliminates the hundreds of inexpert, unequal combats all over the decentralized market territory and concentrates them in a few expert hands. In the cases where it is practicable, the price committee system reduces to an absolute minimum the amount of gasoline, telegrams, and telephone calls, and argumentation that otherwise would be spent in the price-making process. Instead of hundreds of buyers and sellers driving or telephoning and telegraphing here and there, each trying to outsmart the other and buy cheap or sell dear, half a dozen men meet in a committee room once a week and the job is done.

This price committee system was well suited to hogs (actually, to hog carcasses) in Denmark. The marketing system was decentralized, but the area was comparatively small and homogeneous, the product was standardized, and most of it moved to one outlet (the British export market). These conditions were favorable to the price committee system. Where wide areas are involved, as in the United States, with regional variations in local supplies from year to year, and place differentials that are continually changing, the system would be more difficult to administer. The job would be still more complicated if grade differentials fluctuated irregularly. In addition, the price committee requires adequate safeguards to keep it from being misused. It should not be a quotations committee of dealers, for such a committee may misrepresent prices. It should be an impartial, quasi-public body, with the public adequately represented.

The open competitive system may not be able to do a satisfactory job of price determination in some of our decentralized agricultural markets; a price committee system, made flexible enough to fit the needs of the decentralized markets and adequately safeguarded against abuse, may be required. Some progress has in fact been made along these lines in the case of some crops and products, as an incidental feature of the commodity loans and price floors instituted in recent years by the USDA. Some of these loan rates for durable products originally were geographically flat (that is, they were uniform all over the country) and the commodities piled up in storage mostly in the normally low-price areas. Later, the rates were changed to conform to normal geographical differentials. Grade differentials were also introduced. Local surpluses or shortages resulting from these fixed differentials (fixed throughout the season) were handled by local storage and unstorage operations.

In the case of price floors for perishable products that cannot be stored, however, more flexible area and grade differentials are needed. The geographical and grade differentials need to be changed frequently as local changes in supply and demand take place, for these changes cannot be taken care of by storage operations. This problem still awaits solution.

CHAPTER 6

Production and Marketing Information Required

The preceding chapters have outlined the physical and economic supply and demand environment in which farmers have to plan each year what and how much to produce. The situation can be summarized in a few sentences. The need for farm products is stable, but the demand is highly unstable, varying from year to year in a manner that is difficult to predict accurately very far ahead of time. The supply of most farm products fluctuates from year to year, partly on account of unpredictable fluctuations in yields due to weather, and partly on account of variations in crop acreages. Each farmer can determine how much he will plant, but he can only guess how much others will plant; and he can't even guess how much the weather will affect yields nor what the total production will be when the crop is all in.

The fluctuating demand for farm products, therefore, is met by a fluctuating supply. The marketing system attempts to correlate the two as best it can, by storage from times of surplus to times of scarcity and by frequent and sometimes violent fluctuations in prices.

A farmer in this environment has a difficult job. He is like a man with imperfect eyesight shooting with an inaccurate rifle through a fog at an erratically jumping jackrabbit. It is obviously difficult or impossible for any one farmer alone to gather the current national and world economic information that he needs each year to enable him to produce what the market will want by the time his products are ready for sale. About the best that any one farmer could do would be to plan his next year's production according to this year's prices. This would not be much better than forecasting tomorrow's weather to be the same as today's. An overhead federal agency, the Weather Bureau, is needed to forecast the weather, on the basis of information from all over the country and several miles up in the sky. A similar overhead federal agency is needed to gather and interpret economic market information for farmers.

Accordingly, the USDA has been providing the two types of current information required: (1) basic supply and demand information that will help farmers lay their production plans each year, and

(2) month-to-month and day-to-day market reports that will help them market their products after they are produced.

DEVELOPMENT OF "OUTLOOK" INFORMATION

The depression after World War I convinced many leaders, both inside and outside agriculture, that some means must be found of planning the production and marketing of farm products on a more intelligent basis. They believed that economic research should be used more and more as a guide to future developments.

Accordingly, beginning in 1922, the USDA moved beyond the old boundary which had confined it merely to developing improved techniques of production. It began to gather and disseminate economic information which would enable individual farmers to make changes in their acreages of crops and production of livestock in the light of prospective domestic and foreign demands. It also worked out methods for obtaining information from farmers about their production plans—how much of each crop or product they intended to produce.

When the Bureau of Agricultural Economics was set up in 1922, the attempt was made to get the results of economic research out to farmers in such form as to serve as a useful guide to their production and marketing the following year. As one of its first steps along this line, the BAE issued reports on farmers' "intentions to plant" for a number of different crops.

The suggestion was made that this information would be more useful to farmers if it were interpreted in the light of the general economic conditions expected during the coming year. A group of nationally known economists and statisticians from outside the USDA were called together to analyze the "intentions" report and show farmers whether or not these intentions were in line with prospective demand. The first "Outlook" conference of this character was held in April, 1923. Another meeting of much the same group was called in July, to comment on the special pig survey of June, and on the July estimates of the wheat crop.

The second "Outlook" report in 1924 was so well received that the "Outlook" work was organized thereafter on a permanent basis. The work expanded steadily during the next 15 years, in the extent of the research on which it was based and in the wide dissemination of the results through regional and state meetings. Today, all states are developing local "Outlook" agricultural work, including the local adaptation of national agricultural "Outlook" information to fit the local conditions.

As the "Outlook" work progressed, it developed into a spring program in which the emphasis was placed on production plans and a fall program in which major attention was given to marketing. This in turn gave way to a year-round service. Separate reports for about a dozen different commodities were developed. They were issued monthly in mimeographed form. These monthly reports have become a permanent feature of BAE informational work. They include *The Demand and Price Situation, The Farm Income Situation, The Feed Situation, The Dairy Situation, The Wheat Situation, The Cotton Situation, The Livestock and Wool Situation, The Poultry and Egg Situation*, and *The Fats and Oils Situation*. In addition, *The Fruit Situation, The Vegetable Situation, The Tobacco Situation* are issued quarterly. *The World Sugar Situation* and *The Rice Situation* are issued annually. These reports may be obtained free of charge upon request from the Bureau of Agricultural Economics at Washington.

Other important mimeographed reports are the monthly *Agricultural Prices, The National Food Situation*, and *The Marketing and Transportation Situation;* the crop reports which come out monthly during the growing season; the pig surveys that are issued twice a year, one in June and the other in December, showing the size of the spring and fall pig crops; the reports showing the number of cattle and sheep on feed; and the quarterly reports showing the stocks of grain.

With the passage of time, the "Outlook" conferences, both in Washington and in the state and county meetings, have been held more frequently through the year and incorporated into a wide variety of farm meetings. "Outlook" information thus has become less an annual affair and more continuously available for use by farmers throughout the year.

Today, in addition to the dozen or more regular mimeographed reports issued each month by the BAE, most of the state agricultural colleges put out printed monthly reports dealing with the farm products that are important in their states. "Illinois Farm Economics," printed monthly by the University of Illinois, consists of articles many of which have the word "Outlook" in their titles or are "Outlook" in character. The same thing is true of "Farm Economics," put out by Cornell University (New York). "The Kansas Agricultural Situation," issued by Kansas State College, consists entirely of commodity price forecasts, in quite specific terms—"higher wheat prices, lower cattle prices," etc. The first three pages of the "Iowa Farm Economist," put out by Iowa State College each month, is given over to what is called the "Farm Outlook." Other state colleges, too numerous to mention, publish similar reports. A few of the colleges publish brief weekly "Outlook" or "Market Letters" in addition to their monthly reports.

The early annual outlook forecasts made by the USDA had a rather good record. A study of the first six annual outlook reports credited them with 84 to 94 per cent accuracy.[1] Later studies came to similar conclusions.[2] This is about the same as the accuracy of the 36-hour weather forecasts for the Washington, D. C., weather district from 1915 to 1919, which ran about 85 per cent correct.

The shorter time price forecasts seem to be less accurate; the accuracy of the Kansas forecasts during their 47 months was appraised by R. M. Green of Kansas as follows: for wheat, 83 per cent; for hogs, 77 per cent; for corn, 66 per cent; and for cattle, 60 per cent.[3]

When we recall all the jokes made at the expense of the weather man, in spite of the high accuracy of his forecasts, it is not surprising that price forecasting of equal or less accuracy has come in for its share of ribbing. Perhaps the monthly forecaster's job will become easier, in the case of the durable crops, if the ever-normal granary programs become an integral part of agriculture's marketing machinery. The fixed loan rate throughout the season tends to reduce seasonal price fluctuations.

ATTEMPTS TO CONTROL THE SUPPLY AND DEMAND

The underlying philosophy during the early years of "Outlook" work was the philosophy that individual farmers could only adjust themselves to economic forces that were beyond their individual control. Farmers could not do anything about those forces, any more than they could do anything about the weather; they could only adjust their operations to the forces. Under those conditions, the general objective of the "Outlook" work was merely to keep farmers fully abreast of economic developments, so that they could plan their production and marketing accordingly.

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[1] O. V. Wells, *A Comparison of Outlook Statements with Subsequent Events* (mimeo), BAE, USDA, January, 1930.

[2] C. O. Youngstrom, *A Review of the Accuracy and Timeliness of Outlook Statements,* Univ. of Idaho Agr. Exp. Sta. Cir. No. 62, Dec., 1932. See also O. C. Stine, "Progress in Price Analysis and an Appraisal of Success in Price Forecasting," *Journal of Farm Economics,* Vol. XI, No. 1, January, 1929, p. 132.

[3] Stine, *op. cit.,* p. 131.

In 1929, a new philosophy was adopted. The Federal Farm Board was set up to do more than forecast demand, supply, and prices; it was set up to control them, by extensive storage and stabilization operations running into several hundred millions of dollars a year.

It became clear within a few years that the Board was unable to do the job, in the face of the severe depression that developed. But other agencies were set up in its place in 1933—the Commodity Credit Corporation (CCC) and the Agricultural Adjustment Administration (AAA). They had better luck. The CCC made loans to farmers on the "basic" farm products, at specified rates per bushel, bale, etc., and stood ready to take the products if their prices fell below the loan levels. The AAA set out to reduce production by working out reduced acreage or production quotas for each farm, and paid farmers not to produce in excess of their quotas.

During World War II, agricultural price controls were further extended. The Office of Price Administration (OPA) put ceilings on the prices of most products, and on rents; these ceilings helped to prevent a runaway inflation of prices. And to provide a definite incentive to increased production of farm products, the USDA guaranteed minimum prices or price floors for the so-called "basic" and "Steagall" farm products, which constituted about two-thirds of the total agricultural production. In addition, annual agricultural production goals were developed from 1941; specific quantities of the different farm products were set up each year as objectives to be attained. The purpose of these goals was to direct agricultural production along the lines dictated by the needs of the war.

The program of production goals is being continued in peace time. The goals are set on the basis of reports from each state as to its agricultural producing capacity, on the one hand, and the national (and international) requirements for consumption on the other. After the national goals are set, production quotas are assigned to each state. Within each state, quotas are set for each county. Within each county, quotas are not assigned to each farmer; each farmer is merely urged to expand or contract his production of the different production line with the county goals.

The production goals sharpen the outlines of "Outlook" recommendations. They enable the recommendations to be brought to farmers with greater clarity and definiteness than before. They crystallize general recommendations into quantitative, numerical terms—so many bushels of grain, so many head of this and that kind of livestock.

The goals, of course, are not attained precisely each year. Unpredictable variations in the weather alone make it impossible to hit the production goal for each crop accurately. The actual production in 1944 is compared with the goals for 1944 in Table 9.

TABLE 9

1944 ACREAGE AND PRODUCTION GOALS WITH COMPARISONS
(Thousands of planted acres and production units)

	Acreage		Per Cent Actual Is of Goal	Production		Per Cent Actual Is of Goal
	Goal	Actual		Goal	Actual	
Feed grains and forage:						
Corn	100,253	98,722	98	2,929,847	3,228,361	110
Oats	39,558	42,983	109	1,093,935	1,166,392	107
Barley	17,372	14,300	82	327,122	284,426	87
Grain sorghums		. .	.	. . .	.181,756	. ..
Sorghums, except sirup	16,740	18,017	108	.....	.... .	. ...
All tame hay*	62,838	59,547	95	82,201	83,845	102
Food grains, beans, peas:						
Wheat	67,030	65,684	98	813,515	1,078,647	133
Rye*	2,408	2,254	94	27,700	25,872	93
Rice	1,525	1,482	97	70,420	70,237	100
Dry beans	3,048	2,228	73	24,494	16,128	66
Dry peas	895	727	81	10,114	8,873	88
Oil and fiber crops:						
Soybeans, beans*	13,654	10,502	77	238,813	192,863	81
Flaxseed	5,895	3,052	52	44,391	23,527	53
Peanuts, alone	6,158	4,012	65	.	.	......
Peanuts, picked and threshed*	4,964	3,212	65	3,363,356	2,177,670	65
Cotton, all	22,277	20,356	91	11,261	12,359	110
Hemp, fiber and seed	271	74	27	.	68,018	......
Flax, fiber	12	11	92	..... .	14	....
Broomcorn	414	380*	92	49	67	137
Sugar crops:						
Sugar beets	951	639	67	1,799	985	55
Sugar cane, except sirup*	333	295	89	583	476	82
Vegetables:						
Potatoes	3,519	3,010	86	448,321	379,436	85
Sweet potatoes*	1,056	777	74	92,350	71,651	78
Fresh, for market (25 crops)*	1,688	1,873	111	6,330	7,859	124
Processing (11 crops)	2,210	1,938	88	5,636	5,420	96
Seeds:*						
Cover crop	362	360	99		160,550	. . ..
Hay crop	4,868	5,137	106	.. ... .	455,484	......
Tobacco:*						
Flue-cured	1,023	1,007	98	984,200	1,080,003	110
Burley	480	473	99	470,200	491,603	105
Other domestic	247	232	94	263,500	263,765	100
Total excluding hay seeds	372,217	354,135	95	....	....	....

* Harvested.
Source: BAE Data, Agricultural Adjustment Agency, March 15, 1945—PFA.

These new developments have radically changed the "Outlook" situation for farmers. In the case of most farm products (amounting to two-thirds of the total value of agricultural production) the federal government no longer merely forecasts prices, in more or less guarded terms. It guarantees them, and does it in specific dollars and cents. It has not been able to live up to its guarantees every month of the year for every farmer. The farm price of eggs sagged a few cents below the floor for several months in 1944. But so far the government has generally been able to carry its commitments through for the United States average farm price for the year as a whole. Whether it will continue to be able to do it during the period of prospective declining demand after the war is another matter.

Agriculture's original production research department (the USDA) therefore has grown into a marketing-information department, a production-guiding department, and a purchase-and-sales department as well. In some ways these agencies simplify farmers' "Outlook" problems, since in their most fully developed form they let farmers know what prices they can count on before they plant their crops or breed their livestock. In other ways these USDA programs complicate the "Outlook" picture. In the case of some commodities, the prices are not announced early enough, and farmers have to guess not only what the supply and demand situation is going to be but also what the government is going to do. Furthermore, these programs may not always succeed in their efforts, and Congress may in any case drastically reduce their powers as peacetime conditions return. The programs are new and uncertain factors in farmers' economic environments. Farmers need to keep posted on what these programs are attempting to do and how likely they are to do it, as well as on the underlying economic supply and demand situation, and lay their production and marketing plans accordingly.

SELLING WHAT HAS BEEN PRODUCED

After the decisions concerning what to produce have been made, and the products are ready for market, the problem remains of selling them at the time, in the place, and in the form that will bring in the highest net returns.

The durable staples, for example cotton, wheat, corn, etc., can be sold early or late in the season, or for that matter held over for later seasons. A certain amount of flexibility is possible in the timing of livestock sales; livestock can be fed for longer or shorter periods (to heavy or light weights). In addition, some latitude in market selection—selection of the place of sale—is possible for many products. And there is some flexibility in the form in which products can be sold.

The buyers of farm products usually represent large firms—millers, meat packers, etc. These firms usually cover a good deal of territory. Through their buyers and salesmen at numerous points they can keep themselves posted on market conditions all over the country. Some of these firms carry on a good deal of market research; Swift's Commercial Research Department and Armour's Livestock Bureau are two examples.

The individual farmer is obviously too small to provide out of his own pocket the market information possessed by the buyers of farm products. The federal government, therefore, has undertaken to provide farmers not only with the broad annual and monthly production and demand information that will help farmers plan their production, as described above, but also with current week-to-week and day-to-day market reports that will help them market the goods that they produce.

FEDERAL MARKET NEWS

The federal market news service has grown to its present stature from a humble beginning in 1915, when the first report was issued on strawberries at Hammond, Louisiana. Today daily reports are issued by 71 year-round offices and about 45 temporary offices located in the major producing and distributing centers. The service covers the movement, market supplies, quality, and price trends and quotations on livestock, meats, wool, fruits, vegetables, dairy and poultry products, grain, hay, seeds, feedstuffs, cotton and cottonseed, tobacco, rice, honey, peanuts, and other products.[4]

Before the service was established and developed on a nationwide scale, only a relatively few producers could get the market information they needed in time for it to be of practical value—if they could get it at all. And all too frequently the information that did reach them was colored to the advantage of unscrupulous persons who were seeking to profit by it.

Procuring the information which goes into these market reports is a complex job. Reporters on the markets interview buyers and sellers during trading hours and also inspect records made available by these trade interests. They observe actual transactions and make an appraisal of the quality, grade, or condition of the commodities, since these are important factors in determining whether the established prices are actually higher, lower, or unchanged from previous trading sessions. Such appraisals can be made because the reporters are commodity specialists. Reports on shipments from producing centers and arrivals at terminal markets are received from railroads and boat lines. Reports of truck unloads at certain large cities, and warehousemen's reports of stocks in storage also are collected. Numerous contacts with other groups are made for essential news.

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[4] The descriptive material in the next few pages in condensed from *Marketing Activities*, USDA, July, 1945, processed, pp. 9–15. For specific detail concerning time and place of release see *Reports and Periodicals on Marketing and Distribution*, WFA, processed, June, 1944.

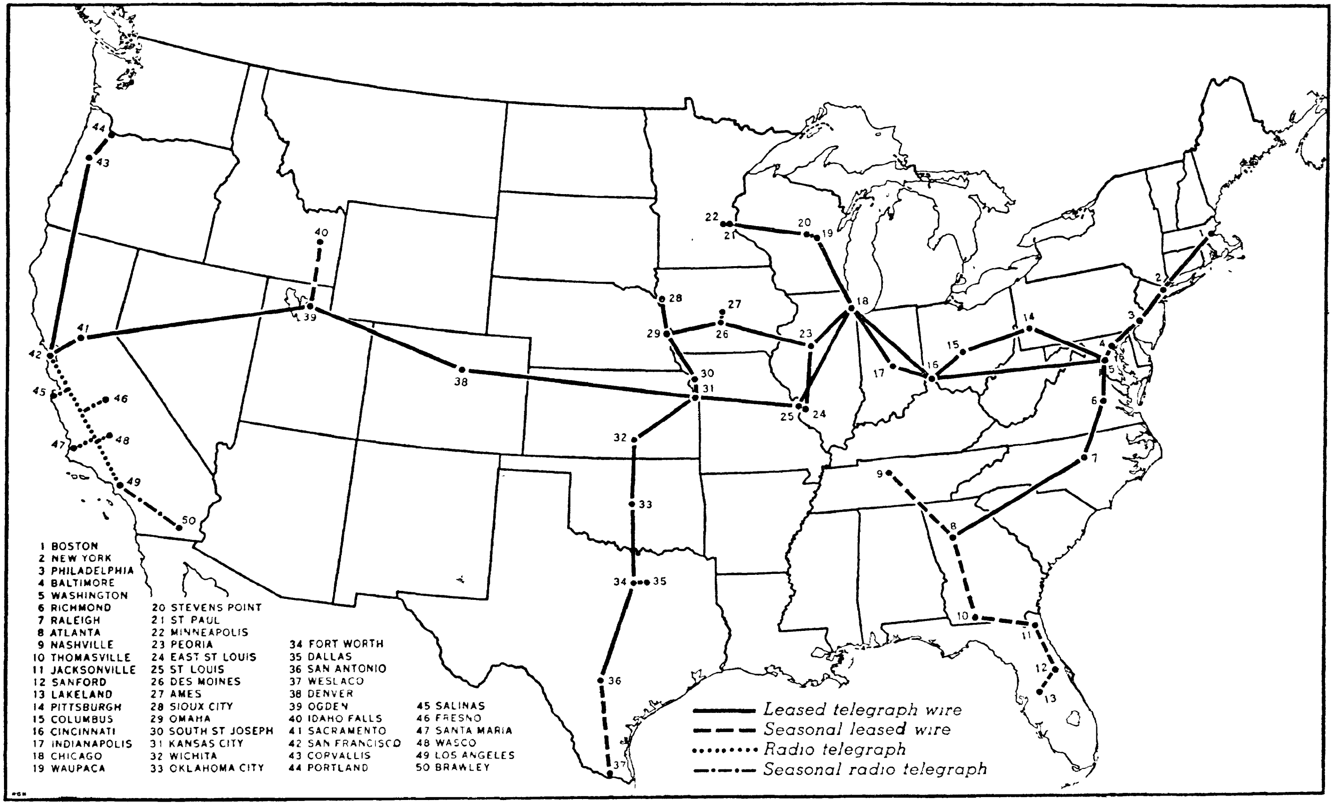
Information received at any one market is made available to the public by means of radio, press, telephone, mail, and bulletin board. It is also distributed widely over leased and commercial telegraph wires to all important trading centers, through trade and farm publications, commercial and financial institutions, and other agencies. The leased wire and radio system of the market news service is shown in Figure 13. Daily market reports are mailed to thousands of interested persons. This service is supplied on request. Most newspapers—particularly in farming areas—carry market news as a regular feature.

The radio plays an increasingly important role in the prompt dissemination of market news. The number of radio stations carrying such reports was 3 in 1921, 110 in 1929, and today is approximately 500—over half the radio stations in the country. A number of stations supply facilities that enable the reporters to broadcast direct from the market. Some of the stations provide three to five scheduled broadcasts a day.

COTTON

Daily cotton price quotations cover the principal cotton markets. Weekly and daily reviews of cotton market conditions are released from Washington and from Atlanta, Memphis, Dallas, and Bakersfield, California. The various reports are distributed directly by mail and indirectly through the press. The radio also is used extensively, to keep farmers and others currently informed of changes occurring on the major cotton markets.

Market news work and cotton classification (grading) are closely coordinated. In recent years special arrangements have been made to help farmers obtain local market prices through representatives



WAR FOOD ADMINISTRATION NEG. 387 OFFICE OF DISTRIBUTION

FIG. 13.—Leased wire and radio telegraph system of the market reporting service, USDA.

selected by organized producer groups. This service for farmers, when coupled with official cotton classificaton, strengthens their bargaining power. It encourages the production of better-quality cotton and improves the efficiency of the cotton-marketing system generally.

Market reports issued at Atlanta, Memphis, and Dallas show prices and grades of cottonseed sold in the various counties. These reports include current prices. Weekly reports also are released from Washington on cotton linters. A monthly report on cotton price statistics also is issued from Washington.

DAIRY AND POULTRY PRODUCTS

Market information about dairy and poultry products includes market receipts, cold-storage movements and stocks, current trading stocks on dealers' floors, movements into retail channels, market comments, and prices. Reports showing terminal market receipts are issued in such detail as to show sources of supplies for individual markets, occasional shifts resulting from changes in market supplies, direct buying, and changes in merchandising methods and outlets. These data also show shifts from rail to truck transportation, or the reverse.

In addition to the data on terminal market receipts, information is also collected and distributed on receipts at country packing plants in different parts of the country where eggs and poultry are handled, and at egg auctions and producers' assembling plants. These data show marketings and supplies available for trading, and to some extent indicate current production, particularly in the case of eggs.

The quantities of dairy and poultry products arriving at a particular market may be used for local consumption, storage, or shipping to other markets. Therefore, information on receipts alone does not give farmers and others a complete picture of the supply of the various items that may be moving currently into consumption. Accordingly, reports are obtained on movements into retail channels. This information, collected and distributed regularly, provides the basis for calculating the trade output of a market or group of markets. Daily and weekly reports of cold-storage stocks in related markets also provide a basis for estimating total United States stocks.

Information about the quantities of butter and eggs moving regularly into retail channels in key markets is compiled from reports received from representative groups of retail distributors. Since retail distributors carry stocks for short periods, reports of retail sales closely measure the rate at which these products move into consumption.

In the past, wholesale butter prices in the terminal markets were the chief basis for butter market reports. Owing to changes in butter marketing practices during recent years—such as the increase in direct marketing (especially to retail distributors by cooperative associations), direct buying in the country by large retail distributors, and mergers on the markets resulting from large-scale organization —the volume of business through wholesale channels has been declining. Accordingly, the methods of reporting the dairy produce markets have been adapted to these changing market practices. The emphasis in some markets has been shifted from the reporting of wholesale selling prices to the reporting of prices received by country shippers.

FRUITS AND VEGETABLES

The market news service on fruits and vegetables makes extensive use of the department's teletype circuits. These circuits link the major terminal markets of the country. Many of the major producing areas are also linked in. This provides a rapid interchange of information on available supplies, demand, movement, and prices. Other major producing areas receive and give the latest market information by means of commercial telegraph.

Reports showing daily carlot shipments, rail (and in some cases truck) receipts, market trends, and prices in the terminal markets as well as in major producing areas are compiled and disseminated by the market news offices in both terminal markets and shipping areas. The information is distributed by mail, wire, telephone, press, and radio, to growers, shippers, railroads, and receivers. It is also made available to every segment of the distributive trade and to governmental, educational, and research institutions.

In New York and Cleveland special broadcasts, made by the market news men around 6:30 each morning, provide growers and shippers with a summary of market activities and trading up to that time. In some other offices market news is broadcast later in the day. At several markets special broadcasts are made which include information of interest to consumers. Permanent offices are maintained in 21 of the major receiving markets, with seasonal offices operating from 1 to 8 months in about 40 of the principal producing areas.

Weekly reports on peanuts and a semimonthly honey report are issued from Washington. Altogether, approximately 10 million daily reports are mailed each year to about 60,000 growers, shippers, wholesalers, and others.

In 19 states, cooperative agreements in which the states pay a part of the cost of the service permit a broader service than could be maintained with federal funds alone.

GRAIN, FEED, AND HAY

Market news on grain is now available at frequent intervals during the day at the principal grain markets. The weekly review of the grain market is especially important to farmers, who need to know the underlying market factors that determine crop prices. The weekly report also includes information on foreign market conditions in the commodity.

On the West Coast, where grain is not stored on the farm but is stored and sold largely at the public warehouse, a more localized type of service is supplied. Most newspapers include grain quotations regularly on their market pages, and radio stations use quotations as well as "spot" information.

The principal grain reports of the service are distributed from Minneapolis on rye, barley, flax, oats, and spring wheat; Chicago on wheat, corn, and oats; Kansas City, Mo., on winter wheat, oats, grain sorghums, and barley; San Francisco on wheat, barley, and flaxseed; Portland, Ore., on wheat, feed grains (barley and oats), and corn.

A special report on feed is provided to feeders and others. This report includes prices of all by-product feeds, information about their supply and distribution, the location of supply, and the areas of greatest demand. Commercial correspondents and federal field offices furnish information on the prices of by-product feeds, such as wheat mill feeds, cottonseed meal, and soybean cake.

The service provides information on the cost of representative dairy and poultry rations in important feeding areas. Another development is a feed price index that indicates the level of feed prices from week to week.

The service on hay is especially important to growers and shippers. Hay information is collected and disseminated from Kansas City, Mo., Portland, Ore., and Los Angeles, Calif. In southern California, news on hay is reported daily.

LIVESTOCK, MEATS, AND WOOL

The market news day in livestock begins about 6 a.m. in most markets. At this hour each major office gets together a report on livestock receipts. This is exchanged by direct wire connections so that within a few minutes each major market knows the estimated supply situation at all markets.

Shortly after 8 a.m. the reporters start their rounds of the market to interview buyers, shippers, and commission men. Usually the first report is an early flash on the hog market, followed by a flash on cattle and sheep markets. The series of reports for the day includes the complete information on supply, price trends, detailed quotations of the day's sales, and the estimated receipts for the following day.

Not every one of the livestock market news offices follows exactly this pattern. The services provided are designed to meet local market needs and methods of operations, and yet be sufficiently uniform to be usable and understandable in all livestock-producing and marketing centers.

Market news on livestock is now collected and disseminated from 29 public markets, and from several large producing areas such as Iowa, where direct trading is especially important and has considerable influence on price trends. In these areas, some reporting problems still await solution. Prices are reported only by areas, and it is difficult for farmers to tell just where the highest prices are in those areas. This problem is discussed further in Chapter 17.

SOME DEFICIENCIES IN MARKET NEWS

The market news program needs still further expansion. In the old days of the terminal market, farmers needed to keep track of only a few alternative markets. Their job was relatively simple. But in the modern decentralized market, farmers need to keep track of a number of market points. The job is getting almost too complicated for an average farmer to handle under the present methods of disseminating market news.

This is shown by the small number of farmers on the mailing lists for the various market news reports. Most of those reports go to buyers and other commercial interests, not to the farmers for whose benefit they are intended. The press carries the news to farmers, but its information is ordinarily a day late, and in many cases is put up in the form of solid paragraphs of details that do not make for quick and easy reading nor for rapid conclusions as to the best market. The radio is more prompt, but most farmers do not have time to tune in on all the stations they need. The federal reports of the decentralized Iowa-Southern Minnesota market cover only broad geographical areas and do not show which point in the area is paying the best prices.

What is needed is final translation of the market news into language that quickly tells farmers what they want to know without making them read or listen through several tables of prices, weights, and grades at several different markets. This requires a radio market interpreter for each state or marketing area.

At present, about half of the radio stations broadcasting livestock market news report only one market from each station. Only 20 per cent of them report two markets each, and so on down until only one—WOI at Ames—reports as many as nine markets.[5] Thus it is difficult for most farmers to make inter-market comparisons without tuning in on several different stations. The market news is carried back almost to the farmer, but the carrying-back process weakens just at the last stage.

Greater localization in the dissemination of market reports would be one way to bridge this last gap. It is not sufficient merely to publish the central market prices and leave each farmer to subtract a fixed differential from those markets to convert them into local prices at his local market. The actual market price differentials between the central markets and the local markets fluctuate from day to day and from month to month. The only way to report local market prices to farmers is to gather and disseminate them on a local or small-area basis.

This is not an easy thing to do, for the number of local or small-area markets is large. The problem is discussed further at the end of Chapter 11 and in several of the commodity chapters in Part III.

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[5] Information provided by R. C. Bentley, market news editor, WOI, Iowa State College, Ames, Iowa.

PART II

MEETING FLUCTUATIONS IN MARKET PRICES

Introduction to Part II

In order to make the best use of the current market information that is now available, a man should know as much as possible about the way market prices usually behave. He needs to know how these prices vary from year to year, from season to season, and from day to day, and the reasons for those variations. If cyclic annual, seasonal or other movements normally take place, he needs to know what those movements are likely to be, and why they occur. If abnormal forces are at work, he needs to know what effects they are likely to have. And if methods of protection against price movements exist, as in the case of cotton and the grains, he needs to know how to use them.

Prices vary at different market points in the decentralized market, as well as over a period of time at any one point. That is, the price at one point frequently moves differently from the price at another point. The price at one point is often higher than at another one week, and lower the next. A marketing man needs to know a good deal about the size of these relative variations in prices, and the reasons why they take place.

Finally, different market practices have different effects on market prices. Speculation may raise or lower the prices of the speculative commodites. Direct marketing may raise or lower the prices for the products concerned. These problems are difficult, and require careful analysis for their solution.

These several market price problems are the subject matter of the second part of this book. The different but related problems of reducing the costs of marketing farm products are covered in the third part.

CHAPTER 7

Cyclic Movements in Agricultural Production and Prices

The first agricultural marketing problem is to determine as accurately as possible each year, before seeding or breeding time, what the demand, supply, and price for each product is likely to be by the time the product is ready for market.

If the demand, supply, or price of a product exhibits a strong periodic or cyclic movement, that makes the job easier. The cyclic movement can be projected with some assurance into the future, and the first step toward a forecast can be taken on that basis.

The production of most crops—wheat, cotton, corn, etc.—fluctuates markedly from year to year. These fluctuations are highly irregular; they are chiefly determined by the weather, which in the main is not cyclic in its changes. For anything more than a few days ahead, the weather remains almost completely unpredictable. There seems to be no cyclic movement, at least no predictable cyclic movement, in crop yields.

The production and prices of the major kinds of livestock also fluctuate greatly from year to year, and there is a good deal of irregularity in these fluctuations too. But some of the prices also show, running through these irregular movements, a more or less marked cyclic movement, with each cycle extending over a period of several years. These movements are usually referred to as cycles, but this word is not exactly the right one. It implies a more fixed regular periodicity than the movements actually show. The word "oscillations" would convey the idea better. The term "cycles" is so firmly established in the literature of the subject, however, that we shall use it here, with the understanding that it refers to movements that are not rigorously periodic in character, but show some irregularity.

HOG PRICE CYCLES

Figure 14 shows that hog prices follow a fairly regular cyclic pattern, first going up for about two years, then down for about two years. (The prices shown in Figure 14 were each divided by the corresponding index of the general price level, in order to remove as much as possible the effects of changes in the general price level.)

Sometimes it takes three years from one high to another, sometimes as long as five, or even six, but the general outline of a cycle averaging about four years in length has persisted through at least the past fifty years. Furthermore, the cycles are divided into alternate major and minor cycles. Each high peak is followed by a lesser peak. The major cycles are four to six years long; the minor ones are three to four years long. The average of all of them is about four years. During the 55 years from 1890 to 1945 there were fourteen hog price cycles; eight of them were major ones, and each of them was followed by a minor one.

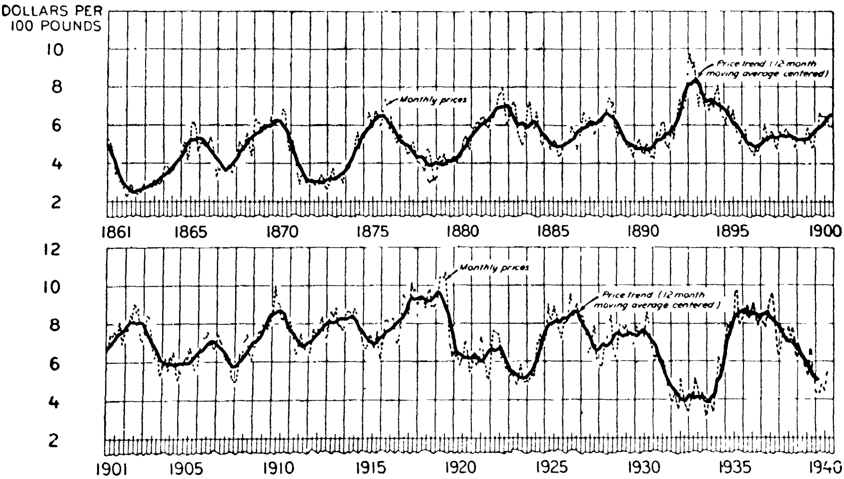


FIG. 14.—Hogs, heavy: prices at Chicago by months, 1861 to date (adjusted to 1910–14 price level).

WHAT CAUSES HOG PRICE CYCLES?

What causes these regularly recurring major and minor hog price cycles? Figure 15 shows the annual United States average prices each calendar year (what is called the "cost to packers") plotted along with the total live weight of the hogs slaughtered each year. The prices in this chart are divided through by the index of the income of industrial workers in the United States each year to remove the effects of changes in demand. The index of the income of industrial workers is used here rather than the index of the general price level that was used in Figure 14 because it removes the effect of changes in demand more accurately than the index of the general price level. But it goes back only to 1924, so it could not be used in

Figure 14. The figure shows that when the influence of changes in demand is taken into account, the hog price cycles are due mainly to corresponding (opposite) cycles in hog slaughter. Hog prices have a high inverse correlation with hog slaughter; when hog slaughter is high, hog prices are low, and vice versa. The data are given in Table 10.

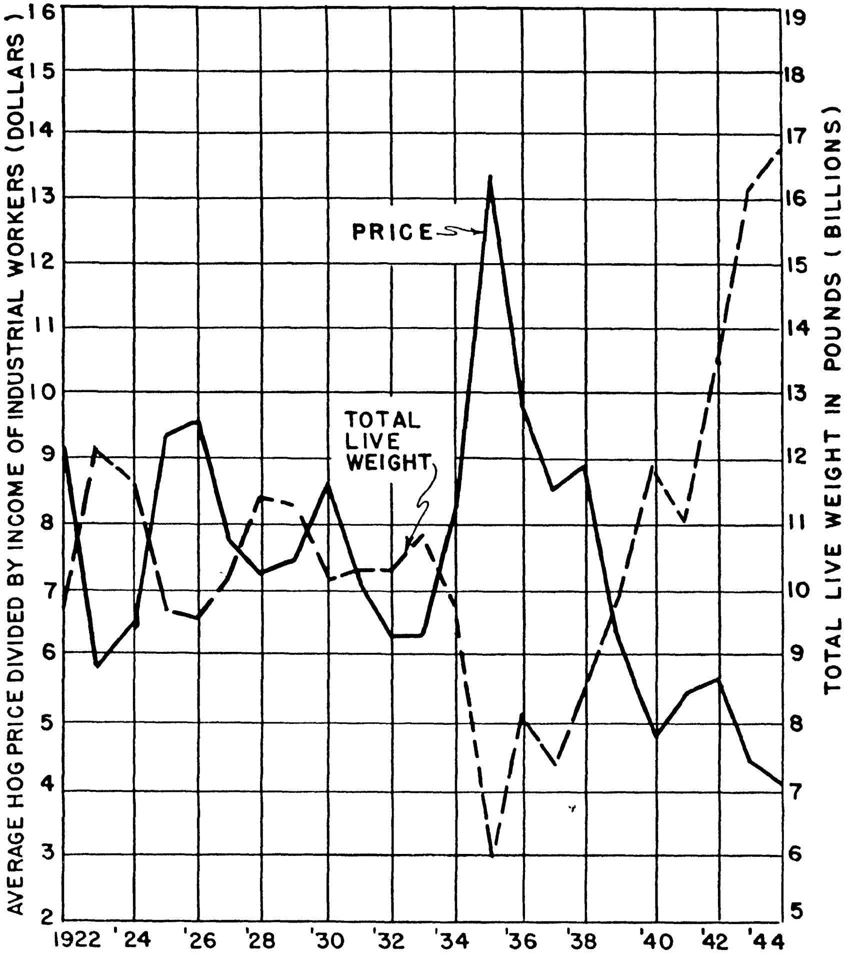


Fig. 15.—Adjusted hog prices and federally inspected hog slaughter, 1923–45.

WHAT CAUSES HOG PRODUCTION CYCLES?

Then what causes the cyclic changes in hog slaughter? The answer is found mainly in the corn-hog price ratio.

TABLE 10

AVERAGE COST (PRICE) OF HOGS SLAUGHTERED IN THE UNITED STATES DIVIDED BY INDEXES OF INCOME OF INDUSTRIAL WORKERS, AND TOTAL LIVE WEIGHT OF HOGS SLAUGHTERED UNDER FEDERAL INSPECTION, 1922–44

Year	(1) Average Cost (price) of Hogs *Dollars per 100 pounds*	(2) Index of Income of Industrial Workers (1935–39 = 100)	(3) Column (1) Divided by Column (2)	(4) Total Live Weight of Hogs Slaughtered Under Federal Inspection
1922	9.30	105	8.86	9,738
1923	7.57	131	5.78	12,024
1924	8.04	122	6.59	11,755
1925	11.81	126	9.37	9,713
1926	12.47	131	9.52	9,555
1927	10.03	128	7.84	10,180
1928	9.18	127	7.23	11,414
1929	10.09	134	7.53	11,226
1930	9.40	110	8.55	10,235
1931	6.11	85	7.19	10,419
1932	3.70	59	6.27	10,397
1933	3.83	61	6.28	10,909
1934	6.19*	76	8.14	9,709
1935	13.20†	87	13.20	5,905
1936	9.75	100	9.75	8,151
1937	9.94	117	8.50	7,139
1938	8.09	91	8.89	8,439
1939	6.54	105	6.23	9,735
1940	5.67	119	4.76	11,716
1941	9.42	169	5.57	11,214
1942	13.57	241	5.63	13,229
1943	14.11	318	4.44	16,141
1944	13.43	325	4.13	16,858

Data from *Livestock, Meats and Wool Market Statistics and Related Data, 1943,* WFA, USDA, pp. 85, 86, and *1946 Outlook Charts,* p. 2, and direct from BAE, USDA.

* $1.64 added to offset effect of processing tax.

† $2.25 added to offset effect of processing tax.

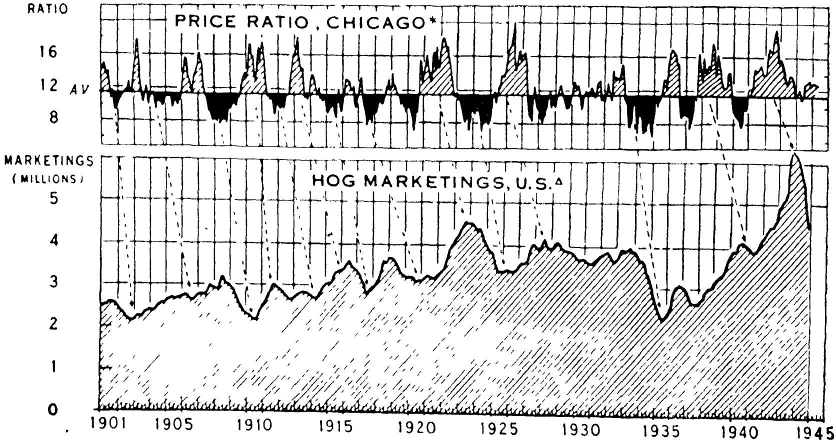
The relation or ratio between corn prices and hog prices is always an important factor in influencing hog production. Hog prices may be low, but this factor may be offset by a still lower corn price. The relation between the two prices is the important thing. The relation is termed the corn-hog price ratio. It represents the price of hogs per 100 pounds divided by the price of corn per bushel; it may be thought of as the number of bushels of corn that it would take to buy 100 pounds of live pork. It does not represent the number of bushels of corn that it takes to produce 100 pounds of pork.

Over a period of years the price records show that at Chicago prices, it takes about 11 bushels of corn to buy 100 pounds of live hog. The average or normal ratio at Chicago then is said to be 11 to 1.

When corn is relatively cheap and hogs are relatively high, the corn-hog price ratio may rise to 15, or even 18 or 20. These are high corn-hog price ratios. Hog feeding is more profitable than usual when the corn-hog price ratios are high, and farmers generally respond to this situation by feeding and breeding more hogs than usual, and carrying them to heavier weights. Conversely, when the ratio falls below 11 to 1, hog feeding becomes less profitable. As a consequence there is a tendency to dispose of feeding and breeding stock in periods when the corn-hog ratio is low.

The effect of the changing corn-hog ratios on the marketings of hogs one or two years later is shown in Figure 16. The upper part of the chart shows the corn-hog ratios drawn above and below the average line, with the portions above the average lightly shaded and the portions below the line colored black. The lower part of the chart shows the changes in hog marketings with the seasonal variation taken out.

HOG-CORN PRICE RATIO AND HOG MARKETINGS, 1901-45



* AVERAGE PRICES OF PACKER AND SHIPPER PURCHASES AND NO 3 YELLOW CORN

Δ 12-MONTH MOVING AVERAGE (CENTERED) OF FEDERALLY INSPECTED HOG SLAUGHTER

U S DEPARTMENT OF AGRICULTURE NEG 15242 BUREAU OF AGRICULTURAL ECONOMICS

FIG. 16.—Corn-hog price ratios and hog marketings, 1901 to date.

Comparison of the upper part of the chart with the lower shows how a period of larger than average corn-hog ratios causes an increase in hog marketings a year or two later, while a period of smaller than average ratios causes a decrease in marketings a year or two later. For example, the high prices of hogs in 1921 resulted in a higher than average ratio and caused increased marketings in 1922 and 1924, but the low ratio of 1923-24 caused decreased marketings in 1925 and 1926.

Now the corn-hog price ratio may change because of a change either in corn prices or in hog prices, or both. Corn prices fluctuate from year to year, in relation to the general price level, in a random, irregular manner, because they result chiefly from changes in the weather, which varies irregularly in a random manner. These irregular fluctuations in corn prices cannot explain the regular (cyclic) changes in hog prices. They may start hog prices swinging, as we start a tuning fork ringing with a single blow; but once started, the system of hog prices and production swings with its own inherent periodicity, as a tuning fork vibrates with its own inherent frequency. The cycles in hog prices, therefore, while perhaps set in motion by shocks from outside (such as large or small corn crops), are kept going by certain characteristics inherent in the hog production system—the ease of expansion and contraction of the hog enterprise, the length of time from breeding to market maturity, the tendency for hog producers to respond to present prices rather than prospective prices, and so forth.

CYCLIC MOVEMENTS IN BEEF CATTLE PRICES

Beef cattle prices also show a marked cyclic type of movement. This is clearly evident in the top line of Figure 17, which is based on Table 11. The farm value per head of cattle other than milk cows, divided each year by the corresponding Bureau of Labor Statistics index of all-commodity prices at wholesale, shows four prominent peaks about fifteen years apart.

These cyclic movements in the value of beef cattle per head at the farm cause corresponding changes in the numbers of head of beef cattle on farms—not immediately, but after a lag of several years. This is shown by the second line from the top in Figure 17, which represents the number of head of beef cattle on farms January 1 each year. The downward sloping arrows between that line and the line at the top of Figure 17 show how high beef cattle values at the farm lead to increases in beef cattle numbers, and how low beef cattle prices lead to liquidation of beef herds. There is a four or five-year lag between the two series; it takes at least that long to build up or liquidate a herd.

The relations from then on are more complex. Large numbers of cattle on farms January 1 do not lead directly to high cattle slaughter the same year, as in the case of hogs. Hogs are ready for market less than a year after they are farrowed, but steers used to be carried to three, four, and five years of age before being sent to market; even now, finished steers average about two years old at the time of slaughter. So there is a lag of about two years between numbers on farms and number slaughtered. Furthermore, the lag

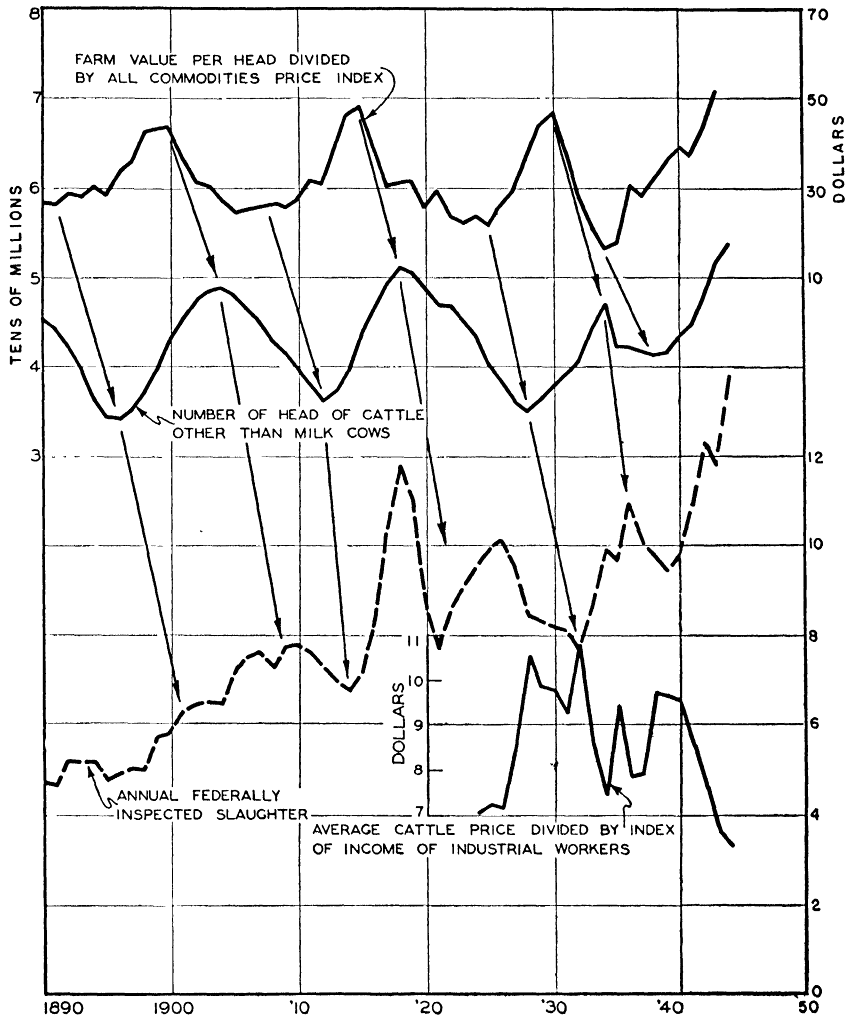


FIG. 17.—Beef Cattle: farm value per head. Number of head of cattle other than milk cows, federally inspected slaughter of cattle, and average price of cattle slaughtered, 1890 to date.

TABLE 11

CATTLE NUMBERS, VALUE PER HEAD, SLAUGHTER, AND PRICE PER 100 POUNDS*

Year	(1) Farm Value per Head Divided by the B.L.S. Wholesale Price Index	(2) Number Head of Cattle Other Than Milk Cows (000)	(3) Federally Inspected Slaughter (000)	(4) Annual Average Cattle Price Divided by the Income of Industrial Workers
1890	27.00	45,014	4,748	
1891	26.40	44,835	4,687	
1892	29.00	42,949	5,206	
1893	28.40	39,955	5,190	
1894	30.80	36,476	5,190	
1895	28.90	34,280	4,809	
1896	33.90	33,939	4,939	
1897	35.80	35,065	5,053	
1898	43.10	37,227	5,045	
1899	43.20	39,833	5,748	
1900	44.00	43,195	5,801	
1901	36.30	45,868	6,312	
1902	31.80	47,426	6,465	
1903	31.10	48,787	6,755	
1904	27.40	48,957	6,702	
1905	25.20	48,288	7,259	
1906	25.70	46,779	7,541	
1907	25.90	45,125	7,633	
1908	26.60	42,997	7,279	
1909	25.60	41,573	7,714	
1910	27.30	39,543	7,808	
1911	31.80	37,803	7,619	
1912	30.90	36,158	7,253	
1913	38.30	37,012	6,978	
1914	46.30	39,640	6,757	
1915	48.70	43,579	7,153	
1916	39.80	46,686	8,310	
1917	31.00	49,767	10,350	
1918	31.50	51,504	11,829	
1919	32.10	50,549	10,091	
1920	25.90	48,945	8,609	
1921	29.80	47,258	7,608	
1922	22.60	46,944	8,678	
1923	23.20	45,408	9,163	
1924	23.50	43,665	9,593	7.05
1925	21.80	40,798	9,953	7.23
1926	26.30	38,166	10,180	7.15
1927	29.50	35,927	9,520	8.60
1928	37.50	35,091	8,467	10.50
1929	44.90	36,437	8,324	9.87
1930	46.70	37,971	8,170	9.70

TABLE 11—*Continued*

Year	(1) Farm Value per Head Divided by the B.L.S. Wholesale Price Index	(2) Number Head of Cattle Other Than Milk Cows (000)	(3) Federally Inspected Slaughter (000)	(4) Annual Average Cattle Price Divided by the Income of Industrial Workers
1931...	38.40	39,210	8,108	9.26
1932.	28.40	40,905	7,625	10.62
1933 .	21.60	44,344	8,655	8.54
1934.	16.70	47,438	9,943	7.42
1935 .	17.70	42,764	9,666	9.42
1936..	30.90	42,651	10,972	7.82
1937.	28.20	41,449	10,070	7.91
1938	32.80	40,783	9,776	9.75
1939..	36.40	41,429	9,446	9.64
1940	39.39	43,271	9,756	6.68
1941..	38.35	45,983	10,946	5.41
1942...	43.35	48,764	12,347	4.56
1943..	52.17	52,008	11,727	3.84
1944...	49.83	54,585	13,960	3.39

* Sources of data: (1) *Agricultural Statistics*, USDA, 1939, p. 308. Farm value per head of all cattle other than milk cows divided by the Bureau of Labor All Commodities Index of wholesale prices (1926 = 100). (2) Number of head of cattle other than milk cows. *Agricultural Statistics*, USDA, 1939, p. 308. (3) *Livestock, Meats and Wool Statistics and Related Data, 1939*, p. 21. (4) Average United States price of cattle (calendar year) divided by the index of income of industrial workers (1924–29 = 100). Cattle prices from *Livestock, Meats and Wool Market Statistics and Related Data, 1939*, p. 91. Income index from "Demand, Credit and Prices," *1941 Agricultural Outlook Charts*, p. 4. Recent data from recent editions of same sources.

is variable. When prices are high and numbers of cattle on farms are increasing, slaughter may be *decreasing*, since a larger than normal proportion of heifers may be kept on farms for building up breeding herds. This happened for several years after 1912, 1928, and 1938. On the other hand, if prices are low and numbers of cattle on farms are decreasing, liquidation of breeding stock may cause the market supplies to increase. This happened for several years after 1909, 1921, and 1934.

These things are well shown in Figure 17, where the annual federally inspected slaughter of beef is shown by the next to lowest line in the chart. This line follows a cyclic pattern lagging from two to four years after the cycles in numbers of beef cattle on farms shown by the line above it, with only one conspicuous interruption. The war-time demand for beef during World War I moved the peak of slaughter that normally would have come in 1920-22 forward to 1918, and the spot from which the peak was moved became a trough.

The final link in the chain of causation is the concurrent inverse correlation between the slaughter and the price of beef cattle. This is revealed by a comparison of the cyclic movements in the slaughter line in the lower part of the chart with the farm-value-per-head line at the top. This relation is not very close, for (1) prices at the farm are affected by the demand for breeding purposes as well as by the amount of slaughter, and (2) the effects of changes in consumer demand upon beef cattle prices are only partly removed by dividing the value-per-head series through by the index of the general price level. The inverse relation between slaughter and prices is shown more accurately if the prices used are the prices of the beef cattle slaughtered (what is called the cost to packers) with the effects of changes in demand removed by division of the prices each year by the corresponding index of the income of industrial workers. (This index is available only as far back as 1924, and the cost to packers goes back only to 1921). This corrected beef cattle price is shown by the lowest line of all in Figure 17.

THE "COB-WEB THEOREM"

A generalized explanation of the inherent cyclic characteristics of the production system of some commodities has been given the name "cob-web theorem."[1]

The law of supply and demand explains how prices reach an equilibrium at the point of intersection of the demand and supply curves. The cob-web theorem explains how, in the case of some commodities, the price does not settle at this equilibrium point but fluctuates about it.

In the case of commodities where the amounts demanded and supplied can be instantly adjusted to the price, cycles do not occur. Thus, as in Figure 18A, the price would reach equilibrium at 10 cents per pound, with production and consumption at 10 billion pounds.

If the commodity were hogs, and production and consumption responded to price instantly, a sudden drouth reducing corn supplies would affect hog production and prices in the manner shown by the new supply curve S_1S_1 in Figure 18A. It would reduce the supply of hogs by 2 billion pounds, let us say (i.e., it would reduce each amount in the supply schedule by 2 billion), the price would rise toward 12 cents. But as prices rose, that would reduce consumption.

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[1] M. J. B. Ezekiel, "The Cob-Web Theorem," *Quarterly Journal of Economics*, Vol. LII, February, 1938, p. 255.

If production and consumption adjustments could be made rapidly, the price could not rise above 11 cents, because at any price above 11 cents more would be produced than could be sold, and the excess would pull prices down to 11 cents. The price would rise, therefore, only to 11 cents, the amount supplied would be 9 billion pounds, and at those figures a new equilibrium would be attained. The next year, if corn supplies returned to normal, the supply curve would return to its original position, and so would price and production. There would be no cyclic movement of hog production and prices resulting from the initial short corn crop disturbance.

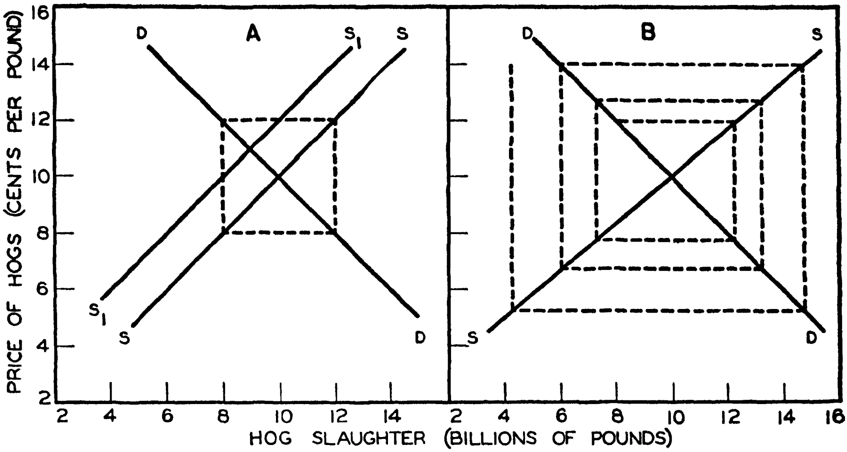

Fig. 18.—Hypothetical demand and supply curves for hogs, illustrating the "cob-web theorem."

But in actual life it takes a year or two for hog production to change in response to prices in the manner shown by the curves in Figure 18A. In the simplest terms, the short-time (one year, let us say) supply curve for hogs is a vertical line. A drouth causing a reduction in the supply of hogs of 2 billion pounds (i. e., a shift in the vertical supply curve from 10 on the quantity axis to 8) would raise the price to 12 cents. Then, when corn supplies returned to normal the next year, farmers would look at the high 12-cent price and increase their hog production not merely back to normal but *above it,* for the 12-cent price cuts the supply curve at 12 billion pounds, not at 10 million pounds.

Then what would happen? That large supply of hogs would reach the market the next year, and depress the price to 8 cents, as Figure 18A shows (a quantity of 12 billion pounds cuts the demand curve at

8 cents). This low price would lead farmers to reduce their production of hogs the next year to 8 billion pounds; this would raise the price to 12 cents, they would increase production next year to 12 billion pounds, and so on.

The difference between this and the simple equilibrium case results fundamentally from the lag of one year between the price and adjustment of production to that price. Other contributing conditions are the fact that farmers are influenced more heavily by current prices than by prospective prices, and the fact that each producer's production is so small an item in the total production of hogs that he ignores the effect of his own production on prices.

It can easily be shown that if the supply curve is more elastic than the demand curve, the cycles, instead of merely continuing, would get larger and larger. This is shown in Figure 18B; the "cobweb" appearance of this sort of chart is clear. Similarly, it can be shown that where the supply curve is less elastic than the demand curve, the cycles get smaller and smaller. The price fluctuations converge toward an equilibrium point, instead of diverging from it as in the previous case.

The lag in the case of hogs actually is about two years rather than one, resulting in a cycle that averages about four years in length. In the case of beef and dairy cattle, the lag is much greater than two years. It takes longer to get in and out of cattle than it does to get in and out of hogs.

This illustration shows how the law of supply and demand works out when competition is imperfect in two respects—that producers cannot respond instantly to changes in price, but do respond to present prices rather than to prospective prices when their supply will reach the market. The fundamental law is still at work, in the same way as ever, but its results are overlaid by the results of an additional law working along with it, just as the retarding action of air upon a falling body will keep its rate of fall from accelerating beyond a certain point, or the upward thrust of air upon an airplane's wings offsets the downward pull of gravity; the law of gravity in these cases is not repealed, any more than the law of supply and demand is repealed in the case of price cycles.

PRELIMINARY APPRAISAL

Cyclic movements in the prices of certain farm products are an evidence of imperfection in the functioning of the market over periods of time. They cause alternate periods of overcrowding and under-utilization of productive equipment, thereby increasing costs. They result chiefly from imperfect forecasting of prices on the part of producers.

Producers forecast prices imperfectly partly because these prices are affected by unpredictable factors—large and small crops, upheavals and depressions in demand, etc.—as well as by predictable ones. The price of the product may be high now, not merely because it is at the top of the cycle, but because a sustained increase in demand is under way. In that case, if the cyclic swing is the more important factor, the thing to do is to reduce production because lower prices are expected in a year or two; if the increase in demand is the more important, then the thing to do is to increase production. More market information is needed in cases like this to help the farmer make the right decision.

Furthermore, a very large corn crop may make it more profitable for a man to raise more hogs, even though it may require selling those hogs in the down-swing of prices, than to keep his hog production constant, since he has to sell on the same down-swing of prices in either case. It may be only the subsequent swings in the cycle that are uneconomic. The question quickly gets into all sorts of complications, related to the particular setup in each farm, but two general conclusions stand out:

(1) To the extent that cyclic price movements result from imperfect market knowledge on the part of the producer, that knowledge needs to be strengthened by increased price analysis research and "Outlook" extension work.

(2) To the extent that cyclic price movements result from unpredictable forces affecting the sizes of crops, federal programs for stabilizing crop supplies and prices are required.

CHAPTER 8

Seasonal Price Movements

Up to this point we have been studying price movements that extend over a period of several or many years. We turn now to consider short-time movements of prices within the year, or what are usually called seasonal price movements (movements of prices within the season, usually about a year in length).

The prices of most farm products do not remain constant through the season; they follow some regular seasonal pattern. This is not at all necessarily an evidence of imperfection in the market with respect to time. The price of a product can be expected to run higher in some months than in others, because it usually costs less to put a product on the market straight from the field than it does to put it into storage and sell it later in the season. Accordingly, most agricultural products come on the market heavily at harvest time, when their costs of production plus costs of storage are lowest (since storage costs at harvest time are zero). These heavy sales depress prices until they reach the point where the seasonal rise in price thereafter corresponds roughly with differences in the costs of producing the product at different times of the year, or storing it (if it will stand storage) from one part of the season to another.

Accordingly, the prices of perishable crops can be expected to fluctuate seasonally more than the prices of the more durable (storable) crops. A crop like strawberries cannot be withheld from the market during periods of heavy shipments and low prices and stored for several months until shipments become lighter and prices rise. At the other extreme, durable commodities like wheat, cotton, etc., can be stored at comparatively low cost, so that the seasonal fluctuations in their prices are comparatively small. Whenever their prices fall slightly below the levels that are expected to be realized later in the season, the operators of storage warehouses buy up the excess of current supplies over current needs and put them into storage until later in the season. This is the more true since, in the case of most of the great agricultural staples, the bulk of the speculative risk can be shifted to professional speculators in future contracts; the men who do the actual storing are content to earn a modest but more certain "carrying charge."

The question to be investigated in this chapter, therefore, is this:

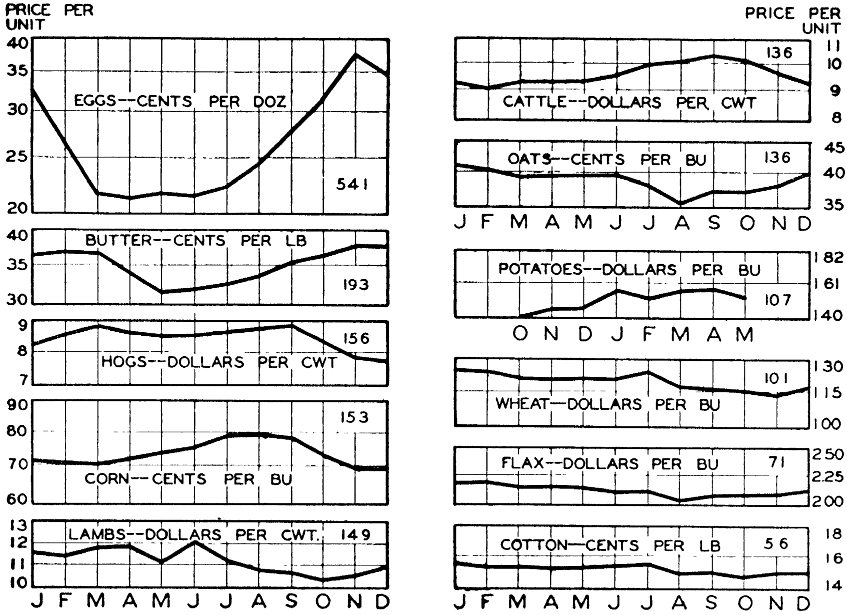

FIG. 19.—Average seasonal price patterns for eleven different farm products, 1921-39. (Data given in Table 12.)

Do the seasonal price patterns for different farm products correspond with the costs of producing the product at (or storing it to) different times of the year? If so, the market is perfect in this particular respect; if not, it is imperfect. The question will be studied first on the basis of average seasonal price patterns over a period of years, and second on the basis of the seasonal price patterns of the individual years separately. Prices did not follow their normal seasonal movements during World War II. Data for those years therefore are not included here.

AVERAGE SEASONAL PRICE PATTERNS

The average seasonal price patterns of a number of different farm products, over the inter-war period of years from 1921 to 1939, inclusive, are shown in Figure 19. The data are given in Table 12. The prices are in each case the prices at the most important terminal market for the commodity concerned. The different patterns are

TABLE 12

Average Seasonal Price Patterns for Eleven Different Farm Products, 1921–39*

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Eggs, fresh firsts, Chicago (cents)	32.5	26.4	21.9	21.4	21.7	21.4	22.1	24.1	27.4	31.0	37.3	34.8
Butter, 92 score, Chicago (cents)	36.3	36.7	36.6	33.9	31.3	31.6	32.4	33.5	38.4	36.3	38.0	38.0
Hogs, Chicago (dollars)	8.19	8.54	8.88	8.62	8.51	8.51	8.68	8.71	8.90	8.38	7.79	7.61
Corn, No. 3 Y., Chicago (cents)	71.2	70.6	70.1	71.8	73.8	74.4	79.0	80.0	78.3	72.3	68.6	69.4
Lambs, Chicago (dollars)	11.41	11.38	11.72	11.75	11.11	12.00	11.19	10.75	10.62	10.34	10.51	10.91
Cattle, Chicago (dollars)	9.20	9.00	9.30	9.31	9.35	9.55	9.93	10.06	10.31	10.12	9.64	9.23
Oats, No. 3 Wh., Chicago (cents)	40.9	40.2	39.3	39.6	39.8	39.7	38.2	35.7	37.3	37.3	38.1	40.0
Potatoes, Chicago (dollars)	...	..	Oct. 1.41	Nov. 1.44	Dec. 1.46	Jan. 1.56	Feb. 1.52	Mar. 1.56	Apr. 1.57	May 1.50	.	...
Wheat, No. 1 N. Sp., Minneapolis (dollars)	1.25	1.24	1.21	1.21	1.22	1.21	1.24	1.17	1.16	1.15	1.13	1.17
Flax, Minneapolis (dollars)	2.18	2.19	2.15	2.15	2.14	2.10	2.12	2.04	2.08	2.08	2.08	2.13
Cotton, middling ⅞ in., New Orleans (cents)	15.39	15.28	15.24	15.19	15.29	15.39	15.52	14.90	14.91	14.67	14.98	14.98

* Sources of data—EGGS: *Yearbook*, USDA, 1927, p. 1105; *Agricultural Statistics*, USDA, *1939*, p. 426; *Wholesale Prices*, U. S. Dept. of Labor (monthly). BUTTER: *Yearbook*, USDA, 1926, p. 1079; 1929, p. 993; *Agricultural Statistics 1939*, p. 393. HOGS: *Yearbook*, USDA, 1927, p. 1011; *Agricultural Statistics, 1939*, p. 328; *Crops and Markets* (monthly), *Livestock, Meats, and Wool Market Statistics and Related Data, 1939.* CORN: *Feed Statistics*, BAE, USDA, February, 1940, p. 33; *Crops and Markets.* LAMBS: *Yearbook*, USDA, 1927, p. 1031; *Agricultural Statistics 1939*, p. 344. CATTLE: *Yearbook*, USDA, 1927, p. 990; *Agricultural Statistics 1939*, p. 316; *Crops and Markets.* OATS: *Feed Statistics*, February, 1940, p. 35; *Crops and Markets.* POTATOES: *Agricultural Statistics 1936*, p. 163; *1939*, p. 240. WHEAT: *Yearbook*, USDA, 1927, p. 757; *Agricultural Statistics 1939*, p. 25; *Crops and Markets.* FLAX: *Yearbook*, USDA, 1927, p. 816; *Agricultural Statistics 1939*, p. 85. COTTON: *Yearbook*, USDA, 1927, p. 922; *Agricultural Statistics 1939*, p. 115; *Wholesale Prices*, U. S. Dept. of Labor.

directly comparable, since they are all plotted on ratio (logarithmic) price scales.[1] They are arranged in the order of the amplitude of the seasonal price movements. This amplitude is measured by subtracting the lowest average monthly price for the good from the highest average monthly price, and dividing this by the average of the two prices. This yields what may be called the coefficient of average seasonal price fluctuation. The coefficient for each product is written in the chart beside the price pattern for that product.

Figure 19 shows that on the average, the prices of perishable crops fluctuate seasonally more than the prices of durable (cheaply storable) crops. The product with the greatest average seasonal price fluctuation, shown at the top of the chart, is eggs. Butter comes next. Then come the various livestock price patterns, and after them, potatoes and the grains. The last item on the chart is cotton.

ARE AVERAGE SEASONAL PRICE PATTERNS CLOSELY FOLLOWED EACH YEAR?

The average seasonal price patterns over the inter-war period 1921-1939 shown in Figure 19 are only a very rough guide to the behavior of prices in any one year. Before average seasonal price movements can be much use, they must be supplemented by a study of changing trends and erratic forces at work each year, separately for each commodity. This is too big a job for the space available in the present chapter; it is big enough for a book in itself.[2] Accordingly, only three products will be studied here—eggs, hogs, and corn—each representing one of the great classes of agricultural products. Even for these three products, the analyses will be only preliminary in nature, not exhaustive; they will serve chiefly as guides to more detailed studies of these and other products on a separate commodity basis.

THE SEASONAL BEHAVIOR OF EGG PRICES

Of all the prices of staple year-round farm products, the prices of eggs show the greatest average seasonal fluctuation. The average seasonal pattern for egg prices ranks at the top in Figure 19.

The coefficient of average seasonal price fluctuation is 54.1. That is, the range from the lowest to the highest price is 54.1 per cent of the average of the two prices. In terms of cents per dozen, the price rises from a low of 21.5 cents in April to a peak of 37.5 cents in November; this is a rise of 16 cents.

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[1] Methods for the accurate presentation of seasonal movements in graphic form are discussed in Appendix B.

[2] A good treatment of this subject within the confines of a bulletin is given in Warren C. Waite and Rex W. Cox, *Seasonal Variations of Prices and Marketings of Minnesota Agricultural Products, 1921-1935*, Univ. of Minnesota Agr. Exp. Sta., Tech. Bul. 127, March, 1938.

The reasons for this large seasonal swing in egg prices are: (1) the great fluctuation in egg production from season to season, (2) the cost of storing eggs, and (3) the deterioration that takes place in the quality of eggs in storage.

(1) *Seasonal fluctuation in egg production.* The bottom of the seasonal egg price cycle comes during the months of March through June and the top of the cycle during October through January. The chief reason for this great swing in prices from spring to fall is the great change from season to season in the number of eggs laid per hen per month.[3]

The seasonal pattern of egg prices has been changing slowly with the passage of time. The amplitude of the swing up and down has been decreasing, and the peak of prices has been coming earlier. Forty years or more ago the price peak usually came in January; gradually it moved up to December; for the past several years the peak has come in November, and indications are that in the next few years it may come as early as October.

The reasons for these changes in the seasonal price pattern trace back to changes in production and storage practices. Before World War I, many small farm flocks produced no eggs at all during the fall and winter; all their eggs came in the spring. But during the 1920's important discoveries were made in the field of poultry nutrition and breeding. Poultry producers began to make use of these discoveries in order not only to get more eggs per hen during the year, but also to get a greater proportion of these eggs during the high-priced months. State colleges, extension workers, feed companies, and hatcheries all advocated earlier hatchings, so that pullets would come into production during the high egg price months in the fall and winter instead of during the following spring. As a result, production during these months has increased, and this has changed the average seasonal pattern of farm egg prices.

The lower part of Figure 20 shows the seasonal change in the number of eggs produced per hen each month between the two three-year periods, 1925-27 and 1937-39. A greater proportion of the annual egg crop is now being produced in the months of October through February, particularly during November, December, and January, and a significantly smaller percentage is being produced in the spring months. Producers have made a good beginning toward stabilizing production into a year-round business instead of concentrating a major part in the spring months.[4]

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[3] The next few paragraphs are based upon an article by C. C. Warren, "New Pattern for Eggs," in *The Agricultural Situation,* USDA, May, 1940.

The upper part of Figure 20 shows how this has affected egg prices. It has reduced the amplitude of the price swing, and moved the price peak a month earlier. The price peak used to come in January, reaching a point nearly 50 per cent above the average; now the price peak comes in December, and it is only 34 per cent above the average.

Figure 20 may convey the impression to the reader that the prices and production of eggs fluctuate equally, i. e., equal proportional amounts or percentages. This is not true. The 1937-39 price line fluctuates from 17 per cent below the average to 35 per cent above the average, a total range of 52 per cent. But the production fluctuates from 4.7 to 12.3, which is 92 per cent of the average of 8.3. The fluctuation in production is almost twice as great as the fluctuation in prices.

(2) *Costs of Storage.* One reason why egg prices fluctuate less than production is that large quantities of the eggs produced during the heaviest production months are put into storage and not sold until later in the season. If all the eggs produced each month were thrown on the market for consumption that month, prices would fluctuate much more than they do at present. As it is, the average seasonal price fluctuations correspond roughly with the average costs of storage.

What are these costs? Some of them are relatively high. Eggs must be held under refrigeration at comparatively low temperatures (around 30°F.) and, being bulky for their value, incur a high storage cost per dollar's worth of eggs. This cost is about half a cent per dozen per month. Six months' storage therefore costs about 3 cents per dozen.[5]

(3) *Deterioration in Storage.* But 3 cents a dozen falls a long way short of explaining the average price rise of 16 cents shown in

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[4] Changes have also been taking place in egg storage practices. The number of cases of shell eggs put into cold storage increased to a peak in the decade of 1920-30 to about 10 million 30-dozen cases a year (about 10 per cent of the total production of eggs) but has declined since to about 7 million cases a year. An opposite change has been taking place in the frozen egg trade; the storage of frozen eggs has increased. The stocks of frozen eggs in storage August 1 have risen from 9.5 per cent of the total egg storage stocks in 1921 to 37.6 per cent in 1938, as shown in the *1940 Agricultural Outlook Charts,* "Poultry and Eggs," p. 13. This increase in the storage of frozen eggs has almost offset the decrease in the storage of shell eggs; the total has decreased slightly since the 1920's.

[5] Earl W. Benjamin and Howard C. Pierce, *Marketing Poultry Products,* Wiley & Sons, 1937, p. 200.

Figure 19. A considerably more important item is the deterioration in the quality of eggs that takes place during storage.

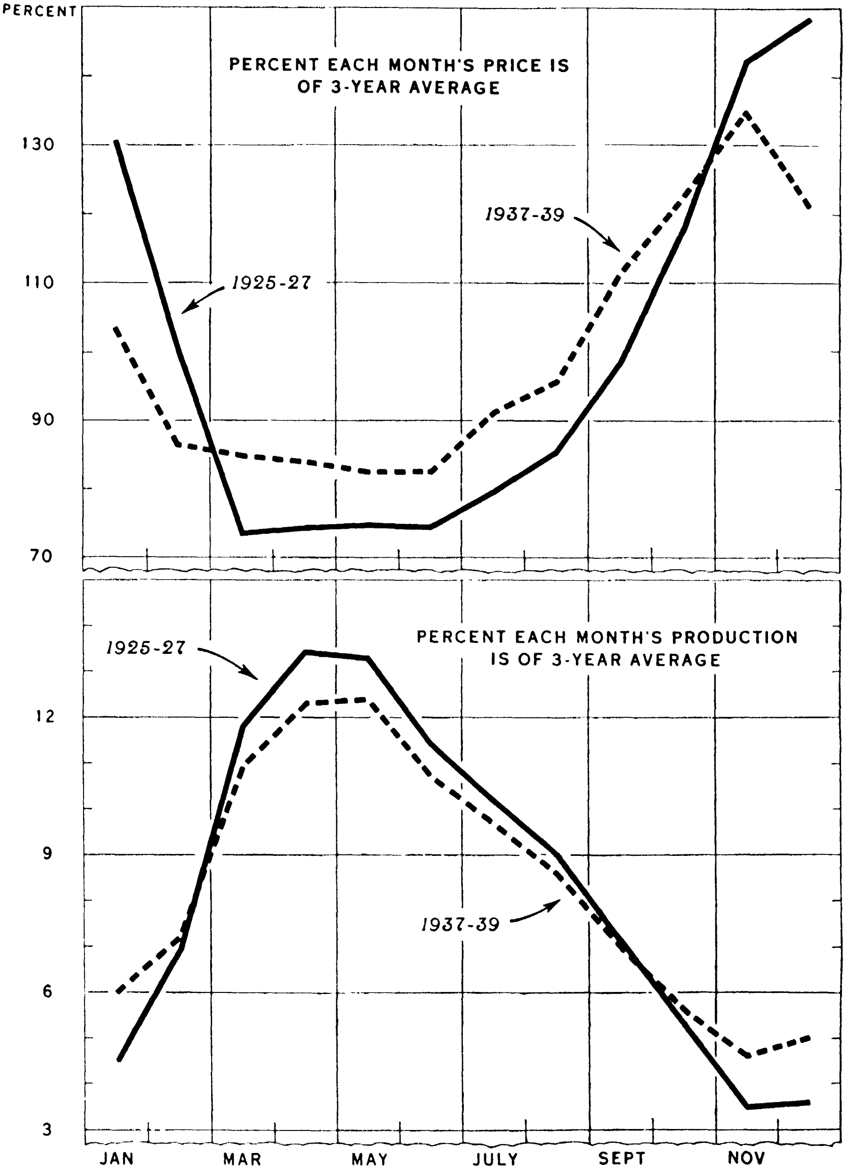

Fig. 20.—Seasonal changes in egg prices and production, 1925-27 to 1937-39. (This figure is reproduced from *The Agricultural Situation*, USDA, May, 1940, p. 22.)

The seasonal average prices plotted in Figure 19 are the prices for fresh eggs. They therefore overstate the rise in price actually received. The eggs that are put into storage in the spring are usually Storage Packed Firsts; when they come out of storage in the fall and early winter they are only Refrigerator Standards. They may sell for as much as 11 cents[6] less than the fresh-egg prices shown in Figure 19. The average rise in price actually received by egg storage operators is shown in Table 13 to be only 3.9 cents a dozen. This is not much more than the cost of storage given above. And the risk is high, as shown by the fluctuation in price rise from year to year.

TABLE 13

CHANGE IN EGG PRICES FROM MARCH–JUNE TO AUGUST–DECEMBER, AT CHICAGO, 1920–38*

Year	Average Price, per Dozen		Change
	March–June, Inclusive †	August–December, Inclusive ‡	
	Cents	*Cents*	*Cents*
1920	43.1	52.2	+ 9.1
1921	26.3	36.5	+10.2
1922	25.2	26.8	+ 1.6
1923	26.4	27.2	+ .8
1924	24.7	36.6	+11.9
1925	30.1	34.1	+ 4.0
1926	30.2	35.0	+ 4.8
1927	25.3	31.8	+ 6.5
1928	30.1	30.9	+ .8
1929	29.9	37.5	+ 7.6
1930	25.3	21.0	− 4.3
1931	18.9	18.3	− .6
1932	13.7	23.0	+ 9.3
1933	14.0	16.3	+ 2.3
1934	17.0	21.2	+ 4.2
1935	23.8	22.9	− .9
1936	21.4	27.0	+ 5.6
1937	22.6	20.1	− 2.5
1938	19.9	23.3	+ 3.4
			Average 3.9

* S. W. Russell and G. D. Humphrey, "Factors Affecting Profits and Losses on Storage Shell Eggs," *Proceedings of the Seventh World's Poultry Congress and Exposition*, Cleveland, Ohio, 1939, p. 386. Data compiled from *Chicago Journal of Commerce.*

† Prices of Storage Packed Firsts, weighted by quantity stored each month.

‡ Prices of Refrigerator Standards, weighted by quantity removed from storage each month.

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[6] See the *New York Produce Review* for November, 1938.

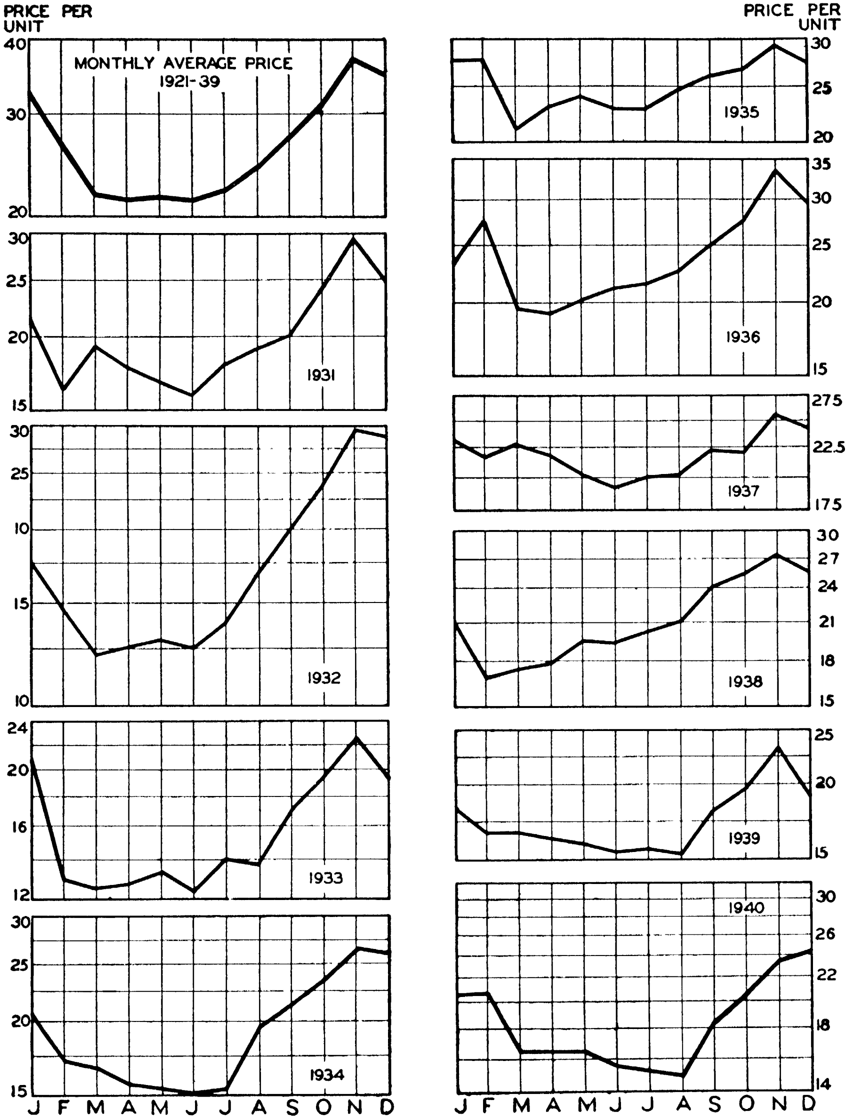

FIG. 21.—Average seasonal price pattern for eggs at Chicago, 1921-39, and the patterns each year since 1930. (Sources of data given in Table 12.)

REASONS FOR VARIATIONS IN SEASONAL PATTERNS

Egg prices show the greatest average seasonal fluctuation of any major farm product, but they also show the closest conformity to this average seasonal pattern in each individual year. That is, the pattern of prices each year follows rather closely the average seasonal movement over a period of years. This is shown in Figure 21, where the average seasonal movement over the period from 1921 to 1939 is shown at the top, and the prices each year for the past ten years are shown in order from the top down.

The biggest single factor affecting the seasonal rise in egg prices appears to be the proportion of the total production of eggs that is stored in the spring.[7] The relation is inverse; when egg storage holdings are high, the seasonal price rise is small, or actually negative. Other factors of less importance are: the change in egg production from spring to fall, the change in all food prices from spring to fall, and the change in egg prices from spring to fall of the previous year.

THE SEASONAL BEHAVIOR OF HOG PRICES

The average seasonal pattern of hog prices at Chicago is shown in Figure 22. Heavy hog prices move somewhat differently from light hog prices, so the two patterns are shown separately.[8]

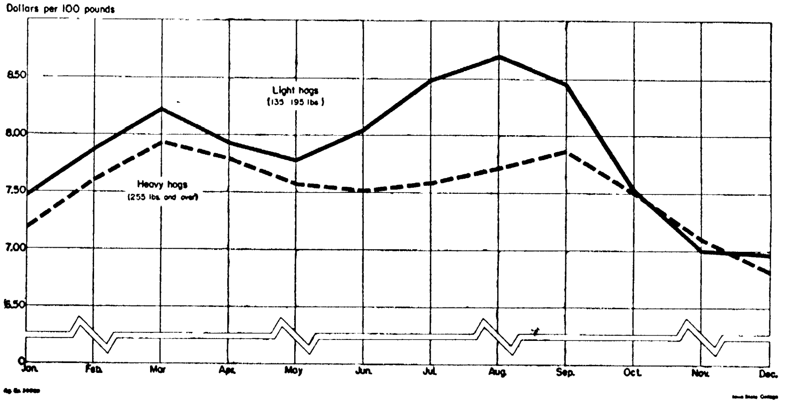

FIG. 22.—Average seasonal pattern of light and heavy hog prices at Chicago, 1929-38. (Sources of data given in Table 12.)

Both prices reach two distinct peaks during the year. The first peak used to come in April, but the development of earlier maturing hogs and improved handling and feeding practices has enabled farmers to get their hogs to market earlier, so that the spring peak of prices now comes in March. By that time the previous spring pig crop has nearly all moved to market, and the fall crop has not yet arrived in volume. The second price peak also comes earlier than it used to; it now comes in the late summer, when the bulk of the fall pig crop has been marketed and the spring crop begins to move.

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[7] Russell and Humphrey, *See* footnote (*) to Table 13.

[8] Figures 16 and 17, and parts of the discussion based upon them, are adapted from Eugene Hamilton, *Seasonal Market Variations and Their Importance to Iowa Farmers*, Iowa Agr. Exp. Sta. and Agr. Ext. Serv., Bul. P5 (New Series), 1940, p. 198.

The late summer peak of *light* hog prices averages about 50 cents per 100 pounds higher than the spring peak. The late summer peak of *heavy* hog prices averages about the same as the spring peak.

Light hogs bring better prices than heavy hogs during the greater part of the year. The spread between light and heavy hogs is widest during the summer months, when heavy marketings of packing sows cause a seasonal peak in the average weight of market receipts. In the fall, when marketings consist almost entirely of young hogs, this price relationship changes, and packers actually pay a premium for heavy hogs for a few weeks.

In Figure 23 the years from 1900 to 1938 have been divided into two groups—17 years in which hog production was larger than in the preceding year, and 17 years in which hog production was smaller than in the preceding year. Five years were eliminated from these calculations, because in those years production changes were too small to be considered significant.

In years when hog production is decreasing, the summer peak in prices averages considerably higher than the spring peak. There is also a tendency in such years for the summer peak to come later

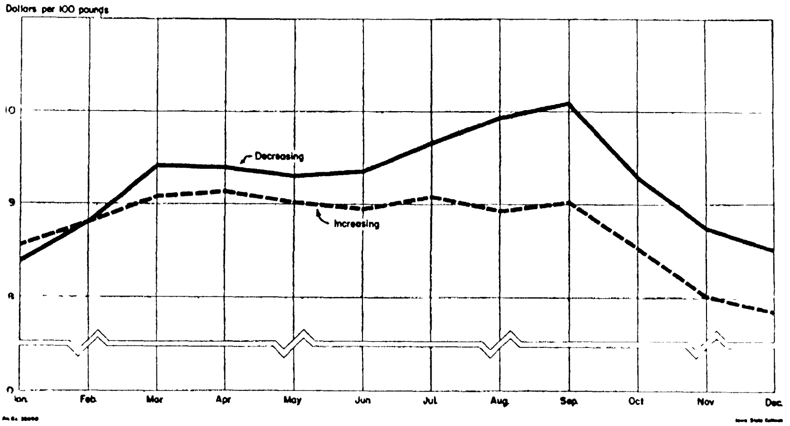

FIG. 23.—Average seasonal pattern of hog prices in years when production is increasing and in years when production is decreasing, 1929-38. (Sources of data given in Table 12.)

than usual. In 17 years when hog production was decreasing, prices averaged highest in September, while in the 17 years when hog production was increasing, prices held almost steady from March to September, reaching a slight peak in April. The difference in the pattern of prices in these two groups of years results chiefly from differences in the pattern of slaughter.

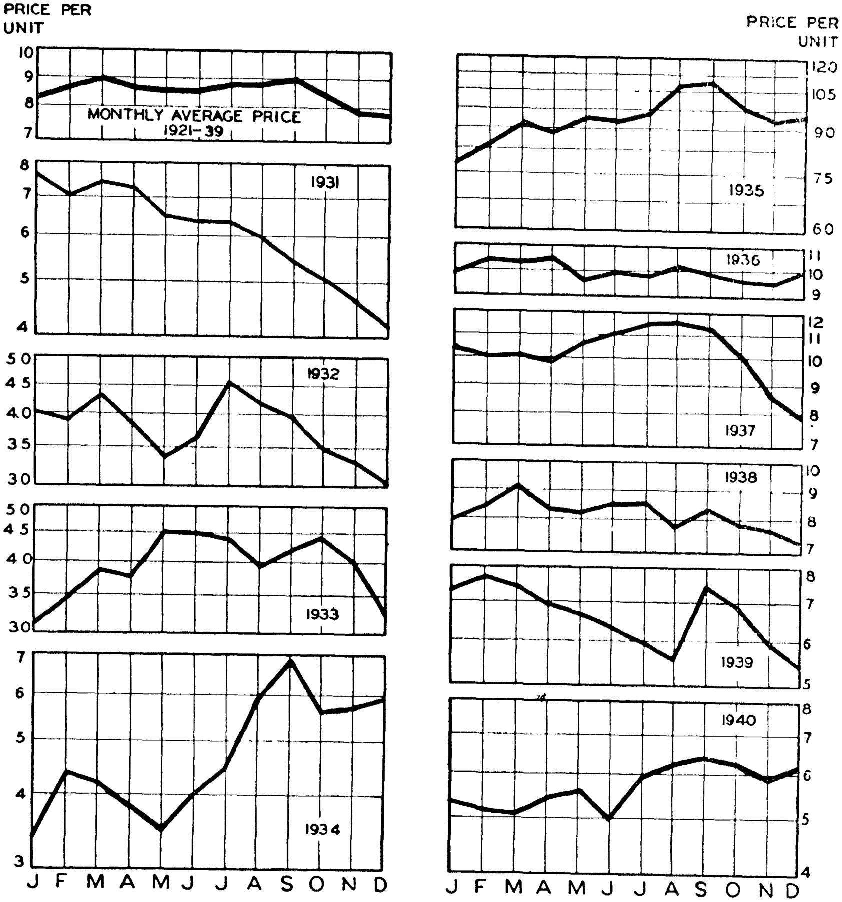

FIG. 24.—Average seasonal price pattern for hogs at Chicago 1921-39, and the patterns each year since 1930. (Sources of data given in Table 12.)

Even with this division of the years into two groups (years when hog production was decreasing, and years when it was increasing) the subaverages do not furnish a very good guide to the seasonal movement of prices in individual years. This is shown in Figure 24, where the seasonal price movements by individual years are highly variable. This irregularity of seasonal price behavior is not the result of irregularity in the seasonal pattern of slaughter, for that is rather stable (except for the differences between years of increasing and decreasing hog slaughter noted above). It seems to be chiefly the result of changes in demand.

Farmers are often urged to have their products ready for market when prices are high, and to avoid selling them when prices are low. A program of this sort would obviously be self-defeating if all (or the majority of) farmers followed it, because they would thus convert the high price peak into the low price trough. In addition, the average seasonal price pattern roughly represents the costs of bringing the product to market at different times in the year, and complete stabilization of prices would therefore be uneconomic. Nevertheless, a small number of farmers have been doing a good job of hitting the high price peaks, and have avoided some of the high costs normally associated with those high price peaks by using advanced production methods. Figure 25 shows how the members of the Iowa Farm Business Associations marketed their hogs in 1938. They sold most of them during the high price periods and had less to sell when prices were low.

Producers in some southern states, where the weather in the winter is not so severe as it is in most of the Cornbelt states, have an opportunity to time their pig crops so that they will reach the market at the time of the average seasonal price peaks, without incurring the extra costs involved in that practice in the Corn Belt. Hog producers in Oklahoma apparently do a good job of this sort of thing. The average seasonal marketings of Oklahoma hogs correlate almost perfectly, and positively, with the average seasonal movement of Oklahoma prices,[9] which closely follows the pattern at Chicago shown above. The numbers of hogs produced in Oklahoma are too small to affect the average seasonal pattern of their prices appreciably.

A SEASONAL MOVEMENT IN THE HOG PRICE FLOOR

During World War II, seasonally flat price floors were used for hogs. Soon after the end of the war, in October, 1945, a new floor was announced, to go into effect from October 1, 1946, to September 30, 1947. This floor has a seasonal pattern similar to the average

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[9] A. W. Jacob, "Seasonal Aspects of Oklahoma Hog Prices and Marketing," *Current Farm Economics,* Oklahoma Agr. Exp. Sta., October, 1936, pp. 120–22.

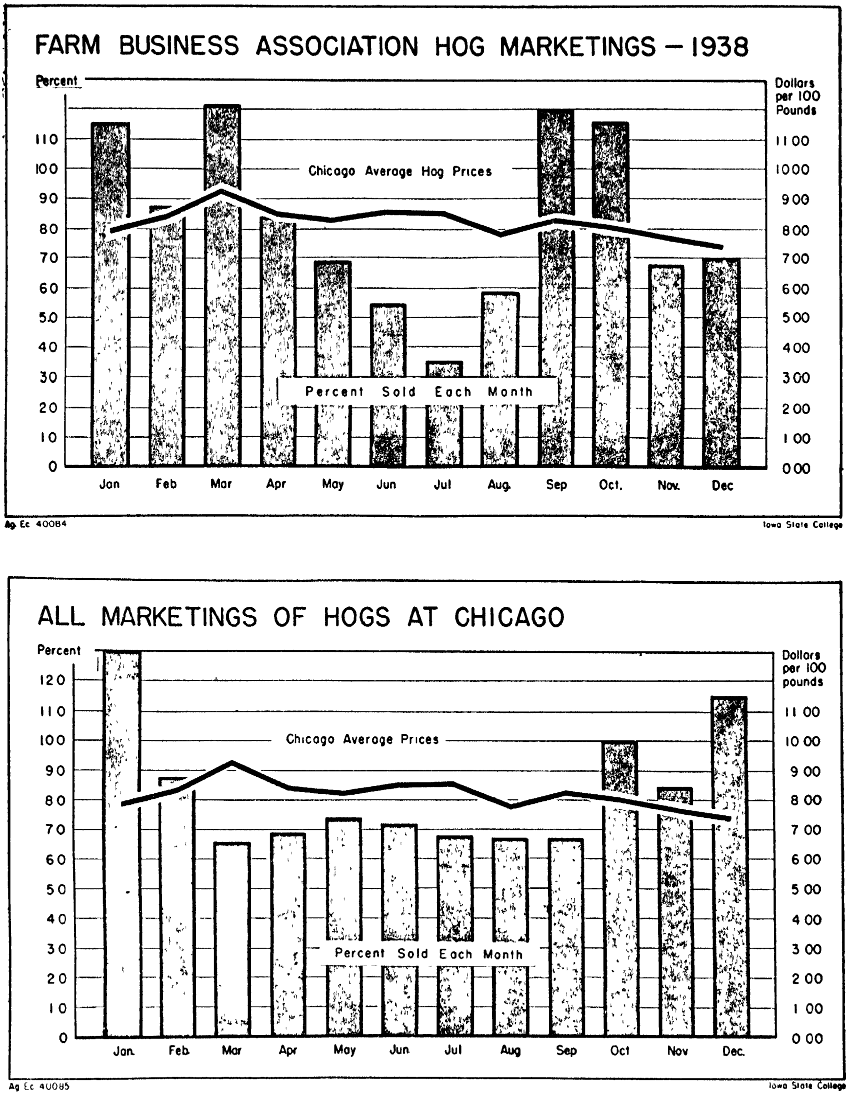

FIG. 25.—Percentage of hogs marketed each month by (A) farm business association members, and (B) all farmers, compared with prices at Chicago, 1938. (Data from association members.)

seasonal movement in the past. Figure 26 shows that the floor ranges from a peak of $13.25 in September to a trough of $10.75 in late December and early January, with a minor peak in March and April and a minor trough in May and June.

A seasonally-varying floor of this sort is preferable to a flat floor.[10] In most parts of the United States, it costs less to produce spring pigs, which come to market in greatest numbers in December or January, than to produce them at other times of the year. Seasonally flat prices, therefore, would encourage farmers to concentrate heavily on the production of spring pigs. This would lead to heavy congestion of marketings in December and January. The receipts in those months in the past normally have been about twice as great per month as in the summer months. This depressed average hog prices about $1.30 per 100 pounds lower than in the summer months, as shown earlier in Table 12. The price of 200-220 pound good to choice butcher hogs at Chicago, by weeks, 1930 to 1941, moved through a wider range—about $1.75 (from $7.08 to $8.82).[11] The relatively low winter price held in check the tendency for hog marketing to be concentrated in December and January. A seasonally flat price would leave the tendency unchecked and result in a

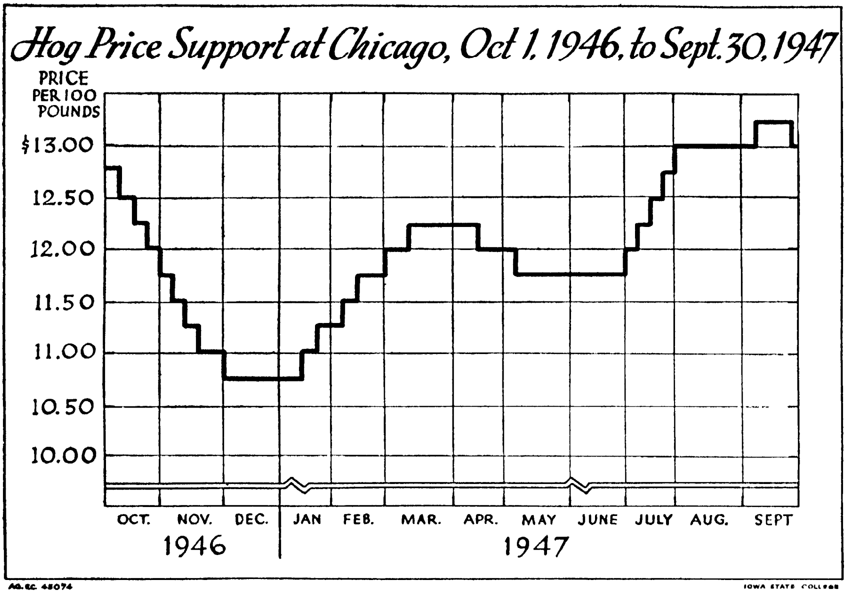

FIG. 26.—Seasonal changes in the price floor for hogs, October 1, 1946, to September 30, 1947.

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[10] "Controlling Hog Prices During the Transition From War to Peace," *Journal of Farm Economics*, Vol. XXV, No. 4, November, 1943, p. 777–92, by the present author.

[11] *Ibid*, p. 788.

congestion of hog receipts in the winter and a scarcity in the summer.

The seasonal price movement in the new price floor is $2.50 from low to high. It applies to good to choice butcher hogs. This seasonal change is greater than the average seasonal change in the past ($1.75) in dollars and cents, but about the same in percentage terms.

It is likely that a seasonal movement in a price floor, published in advance, would have more effect on farmers' production plans than an equal seasonal movement in prices that was only vaguely anticipated. It seems likely that the seasonal movement in the price floor is greater than necessary.

THE SEASONAL BEHAVIOR OF CORN PRICES

Next after livestock, in the order of amplitude of seasonal price fluctuation, come the grains—corn with an amplitude coefficient of 15.3, oats with 13.6, and wheat with 10.1.

The average seasonal pattern of corn prices reflects the average pattern of shipments and the costs of holding supplies from the harvest period on through the following months. It costs one cent per bushel per month to store corn at the public storage elevators at the terminal markets, but only about one-half cent per bushel per month to store corn in the crib on the farm where it was produced.[12] The average seasonal rise in the price of corn from December to August, the peak price month, was shown in Figure 19 to be about 10 cents per bushel. This is a period of eight months. A storage cost of one-half cent a bushel amounts to a total storage cost for eight months of four cents per bushel. Under farm conditions, then, on the average, corn storage appears to be a profitable operation.

Studies published 10 or 12 years ago showed that corn prices rose more through the season after a large crop than after an average or small crop. The reason for this was the fact that the storage period, say from December to August, bridges two corn crop price periods. A large crop, for example, which sets prices at a low level, is most often followed by a smaller crop; and this smaller crop (because of the anticipatory actions of speculators) boosts prices by August to the new crop level even though the new crop is not yet produced. The corn from the old crop is therefore sold at the new crop (higher price) level. The rule, therefore, used to be: After big crops, hold your corn until the summer.

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[12] This half cent covers interest on the investment in the crib and on the grain itself, depreciation, and repair. The "shrink" (the loss of moisture) of the grain is offset by the higher grade and value of the dry corn. For details, see Geoffrey Shepherd and W. W. Wilcox, *Stabilizing Corn Supplies by Storage*, Iowa Agr. Exp. Sta., Bul. 368, 1937, pp. 309–15.

This rule works the other way around, but to a lesser extent, after a small crop. Prices after a small crop will usually not fall all the way to the new and larger crop level by the following August, because although the size of the new crop is anticipated by then, the crop is still not yet in existence and livestock is still being fed from the old crop. Feed supplies are being eked out to a small extent from oats and other crops that are either harvested earlier or cut green, so that corn prices after a short corn crop usually do not rise much through the season and may in fact fall slightly. It is usually best, therefore, not to store corn from a small crop, but to sell it right after harvest.[13]

The behavior of corn prices by individual years since 1930, however, has been very irregular. Study shows that during the early 1930's fluctuations in demand were so great that the value of the storage rules given above was lessened. In addition, the development of the ever-normal granary program for corn during the past few years, implemented by loans above the market price, has brought a revolutionary new development into the picture. The seasonal pattern of corn prices during the last three years before the United States became involved in World War II was entirely changed; it was more like a flat horizontal line than anything else, as Figure 27 shows. The same thing was true to a lesser extent of wheat.

DAY TO DAY PRICE MOVEMENTS

It is well known that receipts of hogs at Chicago are usually heavy on Monday (they averaged over 30 per cent of the total receipts for the week, from 1929 to 1932) and very light on Saturday (averaging less than 5 per cent), the receipts on the other week days falling between these two extremes. It is not so well known that this distribution has been changing during recent years; the Monday receipts are not so heavy as they used to be, and the Saturday receipts are getting heavier.[14]

The weekly pattern of receipts at some other hog markets differs from Chicago's. Receipts at East St. Louis and Omaha are more evenly distributed through the week, with the exception of Saturday,

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[13] A detailed study of the effects of extremely short corn crops and of increasing hog numbers upon the seasonal behavior of the price of corn is given in an article by E. J. Working, "Seasonal Types of Corn Price Movements," *Illinois Farm Economics*, Univ. of Illinois, Nos. 30 and 31, 1937, pp. 137-40. See also L. J. Norton, *When Should Grain Be Marketed?* Cir. 516, Univ. of Illinois, Col. of Agr., 1941.

[14] These paragraphs are based upon the study reported in the *Monthly Letter to Animal Husbandmen*, Armour's Livestock Bureau, Armour and Company, August-September, 1935.

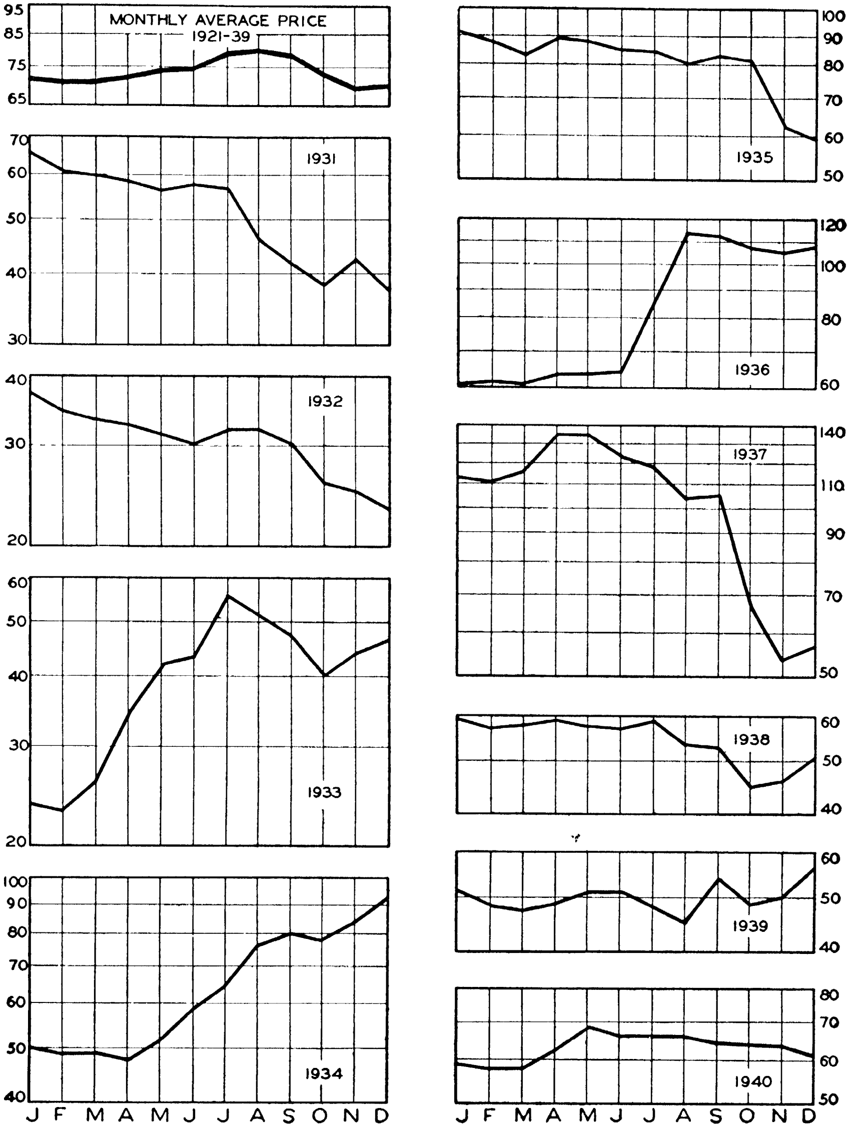

FIG. 27—Average seasonal price pattern for corn at Chicago 1921–39, and the patterns each year since 1930. (Sources of data given in Table 12.)

when receipts are very light. At packing plants located in Iowa, and at concentration points there, too, the weekly pattern of receipts is opposite to Chicago's; receipts are lightest on Monday, and very heavy on Saturday.

What about the weekly pattern of hog *prices* at these markets? Are prices high (on the average) on the days when receipts are high (on the average), the high prices being the cause of the high receipts? Or is it the other way around—the heavy receipts cause low prices?

Apparently, the answer is: Neither. Hog prices by days through the week (averaged, in relation to the average price for each week, separately for each year) fall in practically all cases within less than 1 per cent above or below the average for the week. Such fluctuations as there are result chiefly from opposite fluctuations in average weights. If the averages for the separate years were averaged together, the resulting seasonal price pattern would be an almost perfectly flat line.

This shows either that the average weekly patterns of demand and supply have become almost perfectly adjusted to one another, or else that the demand for hogs over periods of only a few days is almost perfectly elastic for regular changes in supplies.

PRELIMINARY APPRAISAL

It is difficult to appraise the seasonal behavior of agricultural prices, as typified by the three representative products studied in this chapter, in one statement, but an attempt might be made in these words: *Average* seasonal price patterns appear to approach fairly closely to the perfect-market ideal of equality through the season with the costs of producing or storing the crop through the season. The average seasonal price rise for eggs, for example, was found to equal approximately the cost of storage from the heavy-production to the light-production part of the season. But average seasonal price patterns are not followed at all closely in individual years. The market is notably deficient in equilibrating seasonal prices to seasonal costs *each year;* the price behavior in individual years departs widely from the average pattern.

This may appear inevitable in a world so full of unpredictable events, both on the side of supply (fluctuations in acreage and in yields due to weather) and on the side of demand (booms and depressions). Yet the development of ever-normal granary programs is already stabilizing the prices of the chief agricultural staples within the season as well as from year to year, even in the face of these obstacles. Ways may be worked out for extending this stability to other farm products.

CHAPTER 9

Hedging in Futures Contracts

In the case of certain durable staple products a distinctive method of meeting price fluctuations is available. This method affords better protection to (or at least has been more widely adopted by) dealers and processors than farmers. This method is the practice of "hedging"—that is, of executing opposite sales or purchases in the "futures market" to offset the purchases or sales of physical products—grain, butter, etc.—made in the "cash" market. These terms, and the whole setting of "futures trading," require some explanation before the technique of hedging can be explained and its effects analyzed.

In the markets for grain, cotton, eggs, butter, and other agricultural products that lend themselves to objective grading, a system of trading in futures contracts (contracts calling for the delivery of specified kinds and amounts of the physical commodity at a specified time and place) has grown up along with the marketing system for the physical product. The general principles underlying this system are the same for the various products. For the sake of concreteness, our discussion will be phrased in terms of wheat or corn, but it applies almost equally well to the other products.

The volume of trading in futures contracts is large relative to the volume of the actual grain. In the case of wheat, it is 20 or 30 times the volume of trading in the physical commodity itself. More than 88 per cent of all the trading in grain futures in the United States is conducted on the trading floor of the Chicago Board of Trade.

The trading floor of the Chicago Board of Trade is divided by an imaginary line into two parts. In the one part are the tables at which samples of physical (cash) grain are exposed, and the cash grain is bought and sold on the basis of those samples; in the other part are the "pits"—depressions in the floor, like bomb craters, each lined with a series of concentric circular steps so that traders standing on the steps in any pit can all see and hear each other. No physical grain is sold in the pits—nothing but paper contracts. These contracts call for delivery of physical grain at some future date, but in actuality less than 1 per cent of them ever mature and involve delivery of cash grain. More than 99 per cent of the futures contracts are closed out by the exchange of offsetting contracts before the delivery date.

The trade in futures contracts is not confined to the terminal markets where the pits are located. That is where the trades are executed, but a large proportion of them originate out in the country, and are flashed to the pits by an extensive system of private telephone and telegraph wires connecting branch offices with the head offices of numerous commission firms located in Chicago or New York. A man in any small country town can keep in almost minute-to-minute touch with the market by radio, and if he wants to sell or buy a futures contract, can usually get his order executed in the pit and receive confirmation within five minutes.

Futures trading has been the center of a good deal of popular attention and at times attack, because of the speculative nature of most of the transactions in futures, and because of the effect that the trading in futures may have on the prices of the physical commodity. We will examine the nature of trading in futures contracts in this chapter and deal with the effects of this trading on the prices of the commodity in the next chapter.

HEDGING

Trading in futures contracts consists of two kinds; or rather, there is only one kind of trading, but it is conducted for two different purposes. The one is "hedging," and the other is purely speculative.

When a farmer sells a load of corn at the local elevator, he usually receives payment at once; he can go home with the money in his pocket. The elevator man then sells the grain by either one of two methods. He loads it into a car and consigns the carload to a terminal market where it will be sold for his account by a commission man; or, he sells it direct to some cash grain buyer, on the basis of an "on-track" bid at his local elevator siding or a "to-arrive" bid based on delivery at the buyer's point.

If the local elevator man follows the first method of sale, about a week will elapse before the corn he bought from the farmer can be put through his elevator, loaded on a car, shipped to a terminal market, and finally sold there. During this week that elapses between the time that the local elevator man buys the corn from the farmer and the time that he sells it at the terminal market, the price of corn may decline, perhaps 5 or 10 cents a bushel. The elevator man would thereby lose $50, $100, or more on his carload of corn.

He might continue buying and selling like this, hoping that on the next carload the price would rise so that he would recoup his losses. But many local elevators do not have a very big financial margin to run on. If they happened to strike a succession of 5- or 10-cent losses on many carloads of corn, they might go broke.

Local elevator men can protect themselves against this sort of difficulty by hedging their purchases of grain. That is, whenever an elevator man buys 1,000 bushels of corn, he can immediately sell a 1,000 bushel corn future. Then when he sells the corn a week or so later on the terminal market, he can buy back his future. If the price of cash corn has fallen five cents, he loses five cents on his cash corn; but the future will in most cases have fallen about five cents also, and he will gain on the future transaction as much as he lost on the cash. He will therefore break even; the hedge will have protected him against loss.

The hedge will also have "protected" him against any gain. If the price of corn had risen five cents, he would have profited on his cash corn, but the future would have risen too and he would have lost an equal amount there. In other words, by hedging, the elevator man avoids making any speculative losses or gains, and derives his entire income, as he should, from his physical grain-handling operations.

The procedure for hedging can be conveniently summarized in a sort of tabular form like that shown in Table 14. This shows a case of a declining market. In this illustration no allowance has been made for local elevator handling charges (usually two or three cents

TABLE 14

HEDGING TRANSACTIONS

Cash Grain Transactions	Futures Transactions
Dec. 12.—Buys 1,000 bu. corn @ 60c	Dec. 12.—Sells 1,000 bu. May future @ 64c
Dec. 19.—Sells 1,000 bu. corn @ 55c	Dec. 19.—Buys 1,000 bu. May future @ 59c
Loss on cash grain = 5c a bushel	Gain on futures = 5c a bushel

Net gain or loss* = 0

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* In these examples the cost of the hedge (the sale and purchase of the futures) which is ¼ cent per bushel for the "round turn" (the sale and purchase together) is ignored, for simplicity in presentation. If it were included here, the elevator man would have a net loss of ¼ cent per bushel, instead of breaking even.

a bushel), freight charges, or other minor charges. Their inclusion would only complicate the presentation. We will assume that the elevator man bought the grain at a price that would cover freight and other handling charges, and leave him two cents a bushel for his local elevator handling charge. The hedge shown above protects this two-cent local handling charge and enables him to confine his operations to his legitimate field, handling grain, without becoming involved in speculative activities.

CHANGES IN SPREAD BETWEEN CASH AND FUTURES PRICES

In the explanation above, the assumption was made that cash and futures prices moved up or down together, that is, by roughly the same amount. That is what usually happens. Sometimes, however, the spread between the cash and futures prices may widen or narrow one or two cents, or even more. Under these conditions, the hedge does not give perfect protection. The hedger may lose, or gain, by the amount of the change in the spread.

If the spread narrows, will the hedger gain, or will he lose? This can be figured out by visualizing the relations between the different prices. A reference to the tabular presentation above may help. The spread between cash and futures when the hedging operation began was four cents. Let us suppose that the futures fell more rapidly than the cash, and that when the transaction was completed, the futures price stood at 58 cents instead of the 59 cents given in the table. The gain on the futures would then have been six cents instead of five, and the entire hedging operation would have yielded the hedger a net gain of one cent. Conversely, if the cash price had fallen more rapidly than the futures, the hedger would have lost. Small changes in the spread between cash and futures prices occur frequently, so hedging does not give complete protection against price changes.

LONG-TIME HEDGING

We have described one type of hedging—short-time hedging, the purpose of which is to protect the owner of grain from changes in price while the grain is in transit. Another type of hedging, for a different purpose, can also be employed to advantage. This is long-time hedging, in which the hedging operation extends over a period, not of a week, but of several months or a year.

To understand this type of hedging, we need first to understand the normal relationship of the cash price to the futures prices.

When the new corn crop begins to move to market in heavy volume, the cash price is usually several cents below the price of the next or "nearby" future. That is, in January the price of cash corn is usually several cents below the price of the May future. The price of the May future, in turn, is usually a few cents below the price of the July future.

A heavy run of grain to market may at times depress the cash price further than usual below the future. The spread between the cash and the futures prices, however, cannot at any time be greater than the cost at the terminal market of carrying cash corn from that time to the delivery month. For if it were, say two cents wider, operators of terminal storage elevators would buy up cash grain, hedge it, put it in store, and hold it until the delivery month (when the prices of cash and futures have to come together,[1] because the two are then interchangeable). They would then deliver the grain and make a net profit, in this case, of two cents a bushel, after paying the storage charges.

Accordingly, the cash price, within the crop-moving season, ordinarily runs below the futures, but not further below than the amount of the storage charge to the delivery month. The situation in the simplest case is shown in Figure 28.

In this figure, the futures prices are represented by horizontal lines. This assumes that on the average the speculators forecast fairly accurately what prices will be later on as the delivery month approaches. This assumption appears reasonable, since if it appeared at any time that prices in the delivery month would be higher than the present price of the futures, more buyers than sellers of that future would appear and the price of the future would be bid up to equality with the expected price in the delivery month.

A recent study of corn cash and futures prices shows, however, that on the average from 1904 to 1937, the price of the May corn future rose about five cents from February to May; that the price of the July future also rose about five cents, from April to July; that the price of the September future rose from June to August, but fell from August to September; and that the price of the December future declined from September to October but rose thereafter to December to about its original (September) level. Furthermore, while the spread between the cash and futures prices narrowed during the life of the future in the case of the September and December futures, it did not narrow in the case of the May and July futures.[2]

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[1] Actually, in the delivery month the cash price usually runs slightly above the futures price. There are several reasons for this. First, a buyer of cash grain gets the grain just when he wants it; but the buyer of a futures contract who wishes to convert it into grain must stand ready to receive the grain any day in the delivery month ("at the seller's option"). This makes futures contracts a fraction of a cent less valuable than cash grain of a similar grade. Second, No. 2 cash grain may grade anywhere between just barely No. 2, and almost No. 1, and usually grades well up in some factors (weight, moisture content, color, etc.) if not in all, but grain delivered on futures contracts is usually "skin grade"—grain that has been mixed with other grain until it just barely qualifies as No. 2 in most or all of the grade factors, and accordingly is worth less than "country-run" or "virgin" cash grain. (G. Wright Hoffman, *Future Trading Upon Organized Commodity Markets in the United States,* Univ. of Pennsylvania Press, 1932, pp. 311–12.)

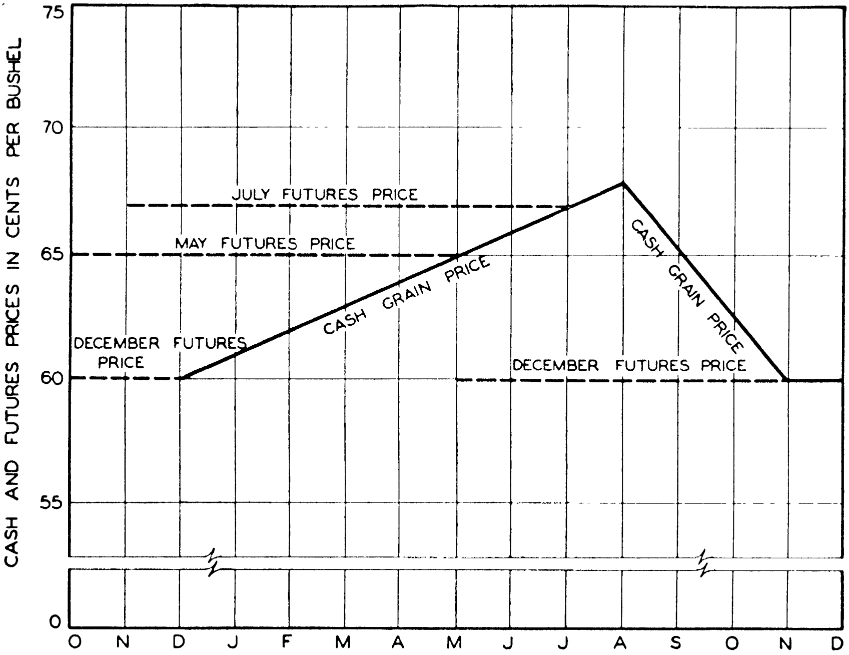

FIG. 28.—Relation of corn futures prices to cash corn prices. Hypothetical data.

This indicates that Figure 28 represents only the general principles of the relationships between cash and future prices, and that these principles work out differently for futures whose life extends from one season to another, than for those whose life is all lived within one season.

The relationships shown in general in Figure 28 also differ from year to year as well as among the different futures. For instance, if the supplies of grain are so great that all the available storage space is filled, the cash-future spreads may widen by more than the carrying charge. If the grain coming to market has a high moisture content so that it cannot safely be stored without danger of going out of condition, that risk will require compensation, which will widen the cash-future spread. Conversely, if current receipts are lighter in relation to demand than expected receipts in relation to expected demand in the delivery month, the current cash price will run *above* the current future, instead of below it. These abnormal conditions, however, work out their effects through the basic mechanism and principles described above.

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[2] Roland S. Vaile, "Cash and Future Prices of Corn," *The Journal of Marketing,* Vol. IX, No. I, July, 1944, pp. 53–54.

The lower limit, below which cash prices cannot fall while storage space is available, is the amount of the carrying charge at the terminal market. This is one cent per bushel per month. A continued heavy run of grain to market in excess of current consumption will cause cash prices to fall to this limit below future prices. The last time this happened in the corn market was the latter part of 1933. The sample quotation below shows the wide spread existing between the cash and futures, and between the futures themselves at Chicago on September 21, 1933.

CORN

May (1934) future	57⅛
December (1933) future	50¾
September (1933) future	46½
Cash Corn (No. 3 Yellow)	46¾

When a situation of this sort arises, it will pay the local elevator man (or anyone else for that matter) to buy cash corn at the going price, hedge it, store it in any space he has available, and carry it for several months or a year. As May approaches and the July and September futures begin to be quoted, the operator can switch his hedge from May to July or September (by simply buying back his May and selling July or September). This enables him to hold his corn through the summer if he wishes; otherwise he would have to sell it by May.

This whole hedging and storing operation is a profitable one for the local elevator man, since he can store at a lower cost than one cent per bushel per month. In fact, if he is using space that would otherwise be unused, his costs are only interest and insurance, which together amount to less than half a cent a month.

The simplest way to visualize the profitableness of this type of hedging is to note the initial width of the spread between the cash price and the price of the most distant future (10⅜ cents in the illustration given above) and then imagine that no change took place in the price of the future throughout its life. The operator would then gain or lose nothing on his future sale and purchase (except for the one-quarter cent brokerage charge) and would gain from having bought cash corn originally at 46¾ cents and sold it in May at the price of the May future, namely 57⅛ cents. This results in a gross gain of 10⅜ cents, from which should be subtracted his cost of 4½ cents (at the rate of one-half cent a bushel a month) to leave a net profit 5⅞ cents a bushel.

It need hardly be said that this result is entirely unaffected by whether the price of cash and futures rises, remains constant, or falls, during the months while the operation is being carried on. The hedge not only permits the operator to earn the carrying charge, but also protects him, like any other hedge, against a decline in price. It is also obvious that not only elevator men, but any others—farmers, for instance—with empty storage space available can follow this practice of long-time hedging whenever the cash-future spreads are wide. The exposition above is phrased in terms of corn, but it applies equally well to wheat, oats, or any other durable commodity for which futures contracts are available.

CAN FARMERS AVOID STORAGE COSTS BY HOLDING THE FUTURES INSTEAD OF THE ACTUAL GRAIN?

Many wheat farmers like to speculate a bit with their crop. They like to hold their wheat for the highest price they can get during the season before the next crop comes on. Most of them hold the physical grain, but some of them sell their wheat crop right after harvest and buy an equal amount of futures in its place. They then hold the futures instead of the cash grain. They reason that by so doing they escape the storage costs that are incurred in the holding of actual grain.

This belief is probably based on the assumption that cash and futures prices move parallel to each other. They do seem to move that way from day to day. Divergencies exist, however, even in these short-time movements, and over the storage period from one harvest to the next, the price of cash grain usually rises relative to the futures as was shown earlier in this chapter. A printed study[3] shows that on the average from 1925-26 through 1936-37, over the five-month period from July to December, the price of No. 2 Hard Winter Wheat at Kansas City rose about six cents a bushel relative to the price of the December future. A farmer who sold his wheat and held futures instead would have escaped the storage costs, which at one cent per bushel per month would have amounted to five cents from July to December; but he would have "escaped" a six-cent relative rise in the price of cash grain too. He would have lost one cent a bushel—in fact, 1¼ cents, since it costs one-fourth cent per bushel to buy and sell futures. If he could have held his wheat on his own farm at a cost of less than one cent a bushel a month, he would have lost that much more by holding futures instead of cash grain.

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[3] Adlowe L. Larson, *Possibility of Avoiding Grain Storage Costs Through Purchasing of Futures,* Oklahoma Agr. Exp. Sta. Bul., Vol. II, No. 5, October, 1938, pp. 120–23.

Actually, this practice of holding the futures instead of the cash grain is nothing but the opposite of the operation "storing to earn the carrying charge" described in the preceding section. If that operation (buying cash grain and selling the future against it) results in a profit, the opposite operation (selling wheat and holding futures instead) would result in a loss. Instead of a blanket condemnation of this practice as unprofitable, however, a better statement would be this: On the average, it does not pay a farmer to sell his wheat crop after harvest and hold futures instead. The only time it would pay him to do this is when the futures price is above the cash price by less than his storage costs to the delivery month; in that case the future is cheap relative to the cash.

A FEEDER'S HEDGE

A practice followed by some Corn Belt feeders may also be examined. Some cattle feeders, feeding more corn than they grow themselves, may find their neighbors unwilling to sell corn in the winter, because they believe that they would get a higher price if they held their corn until the next summer. In that case, the feeder may offer to buy the corn for immediate (winter) consumption, but agree to pay the farmer the going price any day the farmer cares to select between then and September 1. That sounds fair enough. Many sales are consummated on that basis. The feeder takes the corn, immediately buys the same amount of futures against it, feeds his cattle and perhaps sells them before the farmer comes over, say in July, and demands that day's price for his corn. The feeder then merely sells his future and pays the farmer that day's price, and everyone is satisfied. If the price is substantially higher then than it was in the winter, the farmer gains, and the feeder does not lose, because he benefits from the accompanying rise in the price of futures.

In this whole operation, however, the feeder holds the same place as the wheat farmer described in the preceding section who sells his wheat and holds the future instead. He loses by whatever excess he had to pay for his future over the price of cash grain plus the costs of storing that grain. In his case, however, this loss may be more than offset by the fact that if he could not have bought the cash corn locally, except under the arrangement described, the extra cost of importing it from some distance away might have been more than the cost of using the futures market.

APPRAISAL

Viewed in the light of the criterion of the perfect market, hedging appears as a practice by which individual farmers and dealers resign themselves to market imperfection with respect to fluctuations in prices over short periods of time, a year or less in length, and attempt merely to neutralize the fluctuations by executing offsetting contracts in the futures markets. These futures contracts are available only for some agricultural staples, and hedging neutralizes only part of the fluctuation in their prices, not all of it. Furthermore, hedging is not much direct use to the farmers who produce the staples—grain, cotton, etc.; it is useful chiefly to the dealers, millers, and other processors of these products.

While hedging has its uses, therefore, it does not go to the heart of the trouble (unstable prices) and correct it. It is a palliative to neutralize the effects of the disease, not a cure to remove the disease itself. And it is directly useful only to a few classes of sufferers (dealers and processors), not to the great majority (the farmers).

CHAPTER 10

Effect of Speculation in Futures Contracts Upon Grain Prices

Hedging is a useful device for partially protecting buyers and sellers of grain against the uncertainties that result from unstable grain prices. The large volume of speculation in futures contracts that makes hedging possible, however, may have some undesirable effects on the prices of cash grain: (1) It may increase the spread between the prices farmers receive for their grain and the prices consumers pay for it—that is, it may lower the whole level of cash grain prices received by farmers and/or raise the prices paid by consumers. (2) It may increase fluctuations in cash prices; if so, hedging merely protects against price fluctuations which the speculation that goes with hedging itself (partly) creates. It is conceivable that if there were no hedging and speculation, there would be less need for hedging.

Are these real possibilities, or are they just pure imagination? The question cannot be answered by a direct appeal to a few simple statistics. It requires first of all a clear grasp of the principles that underlie the operation of the futures market. These principles differ according to the length of time involved. The discussion accordingly will be divided into two parts: (1) the effect of speculation in futures contracts upon cash grain prices over periods of several months, an entire season, or longer; and (2) the effect of speculation for shorter periods of time, such as from day to day or week to week.

EFFECTS OF SPECULATION OVER PERIODS OF SEVERAL MONTHS

Let us take a concrete case. In June, 1937, the price of cash corn at Chicago and the prices for the three corn futures (July, September, and December) differed widely from each other, ranging from 77 cents to $1.22, and all of the futures prices were below the cash price, as shown in Table 15.[1] The table also shows that two years later, in June, 1939, the cash and futures prices were only about half as high as in June, 1937, and were all close together, within two or three cents of each other. What were the reasons for this? Why were the futures prices so far apart and so far below the price of cash corn in 1937, and so close together in 1939?

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[1] The prices are the weighted average prices for the month of June reported in *Crops and Markets*, USDA, July and August, 1937 and 1940.

TABLE 15

CORN: CASH AND FUTURE PRICES AT CHICAGO

		June, 1937		June, 1939	
Cash Corn	Futures	Cash	Futures	Cash	Futures
No. 2 Yellow		$1.22	. .	$ .51	. . . .
	July future. . .		$1.12		$ .49
	September future. . .		1.05		.51
	December future . .	. .	.77		.52

It is easy to explain why the price of *cash* corn was higher in 1937 than in 1939. The 1936 corn crop had been shriveled by drouth to about two-thirds normal size, and this small supply cut the demand curve at a high price point. In 1939, corn was no longer scarce; the 1938 crop was about normal in size, and demand was weaker than in 1937; the demand curve had shifted downward, and the relatively large supply cut the lower demand curve at a low point. But what determined the futures prices and made them so different in the different years? To take the clearest case, why was the price of the December, 1937, future only 77 cents, when all the other prices (cash and futures both) were above $1.00?

The chief reason was the prospective size of the new crop. The 1937 corn season had opened well, the acreage of corn was only a little short of normal, and the crop was making good progress. So far as could be told in June, 1937, the 1937 crop would be about normal in size when it was harvested in November and December. Now a man who has purchased a December corn futures contract can maintain his "long"[2] position, when December comes, in which case grain will automatically be delivered on his contract any time in

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[2] A man who has sold a futures contract calling for the delivery of grain some time in the future is "short" of grain to deliver on his contract; he is called "short" or "a short." Conversely, a man who has bought a futures contract is spoken of as "long."

December that suits the deliverer. Conversely, "a short," a man who has sold a futures contract, can deliver grain on that contract. These things can happen only in the delivery month (December in this case) but the contract specifies that they must happen then unless the contract has previously been closed out by the execution of an offsetting contract.

In actual fact very few futures are fulfilled by delivery (on the average less than 1 per cent). But as long as the right to fulfill delivery exists free and unobstructed, that tends to keep future prices moving parallel to the course of cash prices.[3] And in the delivery month, the maturing futures contracts and the deliverable grades of cash grain are practically interchangeable (except that cash grain is usually worth a cent or so more per bushel than futures contracts, for technical reasons given in Footnote No. 1 in the previous chapter). It follows then that neither price can get very far out of line with the other. If cash prices rise above future prices, traders will buy (let us say) 45-cent futures, and call for delivery of (let us say) 50-cent cash corn, thereby making nearly 5 cents a bushel profit; if cash prices fall below future prices, traders will buy 45-cent cash corn, sell 50-cent futures, and insist on delivering the 45-cent corn on the 50-cent future. So powerful forces are at work keeping cash and future prices close to each other, in the delivery month.

In June, the delivery month for December corn is far in the future. But what will happen in December (more accurately, what is known in June about what will happen in December) has a controlling influence on the price of the December future in June. If the evidence is becoming clear in June that there will be a good-sized corn crop and that the price of cash corn in December will be, let us say, 80 cents, the price of the December future in June is hardly likely to be 60 cents; there would be such a rush of buyers anxious to buy at 60 cents and sell six months later at 80 cents, that the price of the December future would quickly be forced up to 80.

All this, of course, pertains only to the "new crop" December future. The futures for the old crop in June, 1937, were $1.00 or more. Why? Because they were July and September futures. No matter how good the prospects were for the 1937 crop, you can't run a corn products factory or feed steers on prospects, nor on futures contracts;[4] you have to have corn, and the only corn on the market in July and September was old crop corn; and old crop corn was scarce. Its scarcity would be slightly relieved in July and September by the arrival of new crop substitute feeds, such as oats and barley, and by reserves of old corn that would be let go as soon as producers are certain that the new crop will be big enough to meet their needs; so traders estimated in June that cash corn prices in July would be somewhat lower than in June, and still lower in September. Accordingly, they bid lower prices for "July corn" and "September corn" (futures) than for cash corn in June—but not nearly so low as for new crop corn in December. Figure 29 shows

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[3] G. Wright Hoffman, *Future Trading and Cash-Grain Markets,* USDA, Cir. No. 201, 1932, p. 13. See also his *Future Trading Upon Organized Commodity Markets in the United States,* Univ. of Pennsylvania Press, 1932, and his *Grain Prices and the Futures Market, a 15-Year Survey, 1923-1938,* USDA Tech. Bul. No. 747. January, 1941.

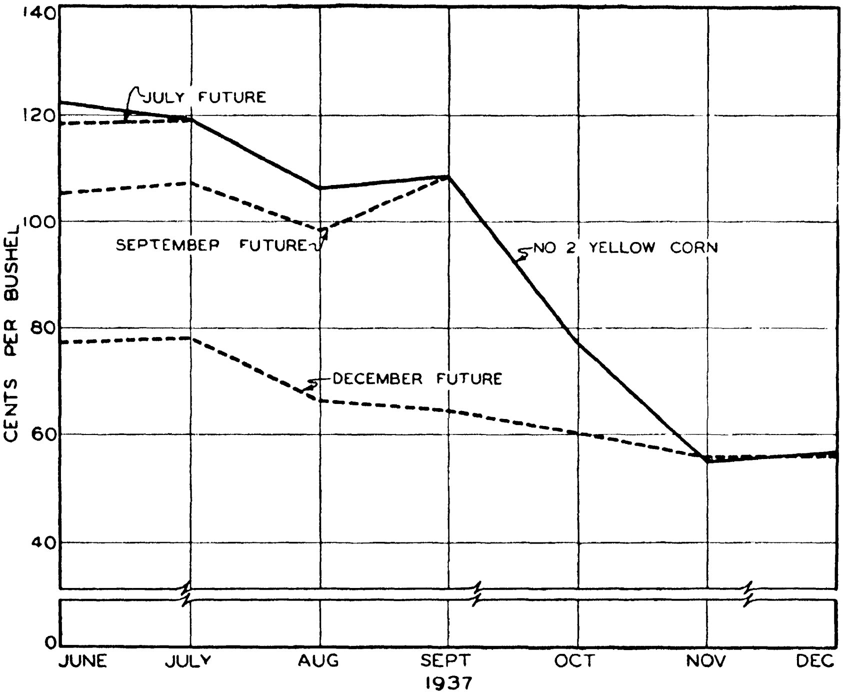

FIG. 29.—Prices of No. 2 Yellow corn and of the July, September, and December corn futures, June-December, 1937. (Data from *Crops and Markets*, USDA.)

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[4] This statement refers to the physical aspect of the question; corn futures contracts are "used" extensively by the corn products industry for hedging purposes. At times the buyer may hold the contracts until the delivery month and call for the delivery of cash corn on them. But the contracts are used merely as a hedge or as a means of acquiring corn. They obviously do not add or subtract a bushel to or from the amount of cash corn available.

how things actually turned out month by month from June to December in 1937. Low as 80 cents appeared in June, it was shown by December to have been too high. The December future closed at 56 cents, not at 80.

The same principles were at work in 1939, but the results were quite different. The 1938 crop was about normal, and the prospects in June, 1939, were that the 1939 crop would be normal also. In addition, a large carryover was being built up under the influence of the 57-cent AAA corn loan. This carryover, in the traders' minds, would act as a drag on prices in the latter part of the season (July and September); they expected cash prices in July and September to be very little higher than in June, and December prices to be slightly lower than in June. So all four prices, the one cash grain price and the three futures, ran along pretty close together.

Does this mean that futures prices at any time are determined by the current prospects for cash prices in the delivery month—that they are a forecast (based on current knowledge) of what cash prices will be in the delivery month? If it does, it would mean that futures prices are based upon (prospective) cash prices.

Many people would not accept this conclusion. They believe that the line of causation runs the other way—that cash prices are based upon futures prices, or at least are greatly affected by futures prices. That belief is inherent in the title of the present chapter. Is this belief entirely false? Do futures prices actually have no effect upon cash prices?

FUTURES PRICES MAY AFFECT CASH PRICES UNDER CERTAIN CONDITIONS

Futures prices, even though they are determined by the prospects for cash prices in the delivery month, can under certain conditions affect the current prices of cash grain. These conditions are (1) whenever futures prices are more than a carrying charge above current cash prices, and (2) during squeezes. These squeezes are discussed later, under the heading of short-time fluctuations. Here we will deal only with the carrying-charge condition.

In the preceding chapter, it was shown that whenever the price of cash grain falls more than a carrying charge below the price of futures, grain dealers will buy the cash, sell the future against it as a hedge, and hold the cash grain until the delivery month arrives. In the delivery month the price of cash grain must be at least as high as the future (it is in fact usually a cent or more above it), so the grain dealer who hedged when the spread between cash and futures was wider than his carrying charges can be sure of making a profit by selling the grain and buying back the future when the delivery month arrives.

Whenever the price of cash grain falls more than a carrying charge below the futures, therefore, grain dealers buy the cash and sell the future in such quantities that their actions raise cash prices, or depress future prices, or both, until the spread between them narrows to the point where it barely covers storage charges. In fact, so long as storage space is available, the spread between cash and futures prices cannot be greater than the carrying charge to the delivery month. As soon as the spread becomes slightly greater than the carrying charge, the action of grain dealers in taking advantage of it keeps the spread from getting any wider. The cash price, then, cannot fall more than a carrying charge below the future. It can rise to any height above the future, as it did in 1937, but it cannot fall more than a carrying charge below the future.

When grain dealers buy the cash and sell the future, the cash rises, or the future falls, or both. Which of these is likely to happen? On the face of it, one might think that the cash would rise and the future would fall by about equal amounts, since the amount of buying of the one would be equal to the selling of the other. But it must be remembered that the futures prices are based solidly on the prospects for cash prices in the delivery month. If nothing has happened to change those prospects, the price of the future will fall only slightly, perhaps not at all, when "hedging pressure" is put on it. For if speculators still believe that the prospects for cash corn are such that it will be worth 50 cents in December, they will buy the December future whenever it falls below 50 cents; the downward hedging pressure on the December future will depress prices only slightly, enough to call forth purely speculative support. The December future will remain at, or close to, 50 cents, and the narrowing of the spread between cash and futures prices will be accomplished almost entirely by a rise in the cash prices.[5]

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[5] Paul Mehl, of the Commodity Exchange Administration, comments on this point, "Any pressure, speculative or hedging, can depress prices temporarily even in the face of bullish factors. I have seen the price of futures depressed in the face of bullish new crop conditions due to heavy liquidation of an old crop future. The selling pressure of the old crop futures was greater than the buying of the new crop futures." This is no doubt correct, but it is a short-time phenomenon, not a long-time matter. If the volume of hedging sales orders coming in, to be executed "at the market," is greater than the volume of buying orders at that time, some of the hedgers have to offer to sell at one-eighth or one-

It is only through the hedging mechanism that this supporting of cash prices would be effected. If no storage space were available to potential hedgers, for instance, no amount of volume of futures trading by itself would support cash prices. The support that is actually effected through the hedging mechanism has been exaggerated in some of the literature. If there were no futures trading at all, and cash corn prices fell for the hypothetical reason given above, or for any other reason, cash grain dealers would buy cash corn whenever its price fell more than a carrying charge below the prospective price in later months. The only additional support that can be attributed to the futures market is that with it, the cash grain dealers can hedge their position; without it, they would have to carry the risks themselves instead of loading them on to the futures speculators' shoulders.

Some preliminary conclusions may now be drawn. They refer only to long-time (seasonal and annual) price determination; short-time (week to week and day to day) price fluctuations are dealt within the next section. The major conclusion is that futures prices do not determine cash prices; things work the other way round—cash prices determine futures prices. More accurately, the prospects for cash prices in each delivery month determine each of the current futures prices.

The minor conclusion is a sort of amendment to the major conclusion given above: Futures prices set a floor below which cash prices cannot fall by more than a carrying charge to the delivery month. This effect of futures prices on cash prices works through the hedging mechanism, and is comparatively small.

SHORT-TIME PRICE FLUCTUATIONS

The preceding conclusions apply to the broad movements of grain prices from one season to the next and from one year to another. The small, short-time perturbations of prices from hour to hour and day to day are another story.

Some observers have argued that speculation cannot cause short-

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quarter of a cent below the going price to get their orders executed at all. This lowers the going price one-eighth or one-quarter of a cent, or more, until this lowering evokes enough speculative buying orders to equal the volume of sales orders. Because market knowledge is not perfect in the grain market, even though more perfect than in some other commodity markets, the going price has to fall temporarily in order to call forth additional speculative buying (or covering of previous speculative sales). This is a matter of institutional friction, not of price-determining principles.

time price fluctuations. Any speculator, they say, who attempts to sell the future down out of line with fundamental price conditions has to buy back the same future before long, and the fundamental price conditions will have helped to pull prices back up when he buys, so that he is likely to suffer a net loss rather than gain from his operations.

But this argument leaves out of account two things—"follow the leader" trading, and "stop-loss" orders. Some of the trading in futures contracts is done by traders who try to size up what the larger speculators are doing, and go along with them. If they believe that a large speculator is offering futures in considerable quantities, they will sell (in smaller quantities) too. If the large speculator is selling because of advance information, or more accurate interpretation of current events than the interpretations of others, they will benefit from his foresight. If he is merely seeking to unsettle the market, they will help him; his large sales, unsettling on account of their size, will be reinforced by their small sales.

"Stop-loss" orders are also a factor, especially in very active markets. (A speculator who has bought at 75 and seen prices rise to 81 may protect his profits by putting in a "stop-loss" order—an order to sell if the price falls to 80 or 79 cents.) If there is a considerable amount of stop-loss orders on the market, that complicates things. A large speculator, sensing the existence of stop-loss orders at 79 cents when the current price is 81 cents, might test the market to satisfy himself there was not much latent buying power in it, and then throw half a million bushels of futures on the market. If the market is nervous, it may break through these stop-loss orders at 80 and 79 cents. Then he gets help. The stop-loss orders are uncovered, and are thrown on the market regardless of the effect they may have on prices. Under their weight, the price may drop another one or two cents; if it uncovers further stop-loss orders on the way down, it may go still lower. "The market," the reporter will say in the evening papers, "was honeycombed with stop-loss orders. Prices broke several cents, once they started down." The initial sale of half a million bushels of futures may have resulted in the dumping on the market of several times that volume of other speculator's contracts. Then the large speculator, whose half a million bushels have been sold at an average price of 80 cents, can buy it back at a lower price and pocket his profits.

This illustration has been phrased in terms of declining prices, but the mechanism works just as well the other way around. Stop-loss orders can be used to protect shorts against rising prices, and in that case they may contribute to a rise started by a large speculator buying. Regulations instituted during the past few years which limit the amount of trading that can be conducted by any one speculator have reduced the effects of the operations described above.

"SQUEEZES"

Another source of short-time price fluctuations is "squeezes."

The volume of futures trading in wheat is ordinarily about twenty-five times greater than the volume of trading in the grain itself. At any one time, the volume of futures contracts outstanding (the "open contracts") is large relative to the volume of actual grain in the market.[6] Usually more than 99 per cent of the bushels represented by the futures contracts are closed out by offsetting futures contracts, so that very little grain is actually delivered on any of them.

But the contracts specify actual delivery of the grain unless both buyer and seller accept offsetting contracts. A large market operator may see an opportunity, in years when deliverable grain is scarce, to quietly buy up large quantities of futures, and also buy up most of the supplies of deliverable grain as they come on the market during the delivery month. As the end of the delivery month approaches, the "shorts" (the speculators who have sold futures contracts expecting to "get out of the market" by making offsetting purchases of contracts before the end of the delivery month, and any bona fide hedgers whose grain is "out of deliverable position," that is, stored in elevators out in the country or in other contract markets, or whose grain is of nondeliverable grade) find that there is a "congestion" in the futures market; they cannot close out their trades by offsetting contracts without paying an exorbitant price for them to the "squeezer." They are caught. As the last trading day of the delivery month approaches, if there is not enough time to get much more grain in from the country, the "shorts" finally have to pay the "squeezer" his price, or default on their contracts. The price of cash grain may rise 12 or 14 cents in the last few days of trading, as it did when Howell, a leading Chicago professional speculator, ran his squeeze in July corn in 1931.

Howell's squeeze was a spectacular performance. He began buying July corn futures as early as April 24, 1931. By the end of June he held in his own name and in the names of several relatives and friends 8,400,000 bushels. His line at this point accounted for 57 per cent of the total open commitments on the long side of the July future. Very little of this long line was sold, so that as each day passed the demand for supplies became increasingly urgent. Deliverable supplies at the end of June were 5.3 million bushels, with about half of this amount in Chicago. Purchases of cash corn at more and more distant and smaller markets had to be made. A total of 3,514 cars was shipped to Chicago from July 20 to July 31 to meet the demands of this one interest. They were in fact practically all met with deliveries of over 8,000,000 bushels, but not without widespread disturbance of normal grain movements and prices. On June 30 the July future closed 1½ cents over the September; on July 20 it closed 5¾ cents above; on the 25th, 7¾ cents above and on the 31st, 22¼ cents above the September.[7]

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[6] There are several reasons for this, one of them being that the bulk of the trading in futures is entered in Chicago, but only a small part of the visible supply of grain is stored there and only a small part of the grain in the country passes through Chicago.

The Chicago Board of Trade has put through several measures designed to make it difficult or impossible to conduct a squeeze. During the last three business days of the delivery month, the delivery of grain on contracts is permitted in cars anywhere in the switching distance of Chicago. Other grades of grain than the basic[8] contract grade are deliverable at stated premiums or discounts; trading in the expiring future is not permitted during the last seven days of the delivery month, to give the "shorts" the rest of the month to get grain in from the country or from other terminals. And finally, definite limits have been put upon the number of bushels of futures contracts that any one trader may hold, and upon the volume of trading that he may conduct.[9]

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[7] G. Wright Hoffman, *Grain Prices and the Futures Market, a 15-Year Survey, 1923-1938*, USDA, Tech. Bul. No. 747, January, 1941, p. 68.

[8] See *Grades of Grain and Flaxseed and the Millfeeds Deliverable on Contracts for Future Delivery*, Commodity Exchange Administration, USDA, revised to May 1, 1938.

[9] The Commodity Exchange Act as Amended June 3, 1939, USDA, p. 49, specifies the following trading limits:

Position Limits. 1. The limit on the maximum net long or net short position which any person may hold or control in any one grain on any one contract market, except as specifically authorized by paragraph 2 hereof, is: 2,000,000 bushels in any one future or in all futures combined.

2. To the extent that the net position held or controlled by any one person in all futures combined in any one grain or any one contract market is shown to represent spreading in the same grain between markets, the limit on net position in all futures combined set forth in paragraph 1 hereof may be exceeded on such contract market, but in no case shall the excess result in a net position of more than 3,000,000 bushels in all futures combined nor more than 2,000,000 bushels in any one future.

These measures, however, have not been entirely successful in preventing "squeezes. Cargill, Inc., held a long futures position in the 1936 December corn futures and in turn in the 1937 May and the 1937 July. In addition to these futures positions their normal merchandising business gave them substantial holdings of cash corn in a period of extremely small deliverable supplies. Coming at the end of the crop year, therefore, their operations were certain to have a marked influence upon September corn prices. By August 12, Cargill had acquired a long position in September corn in excess of 8,000,000 bushels. This they carried, in part in their own name and in part under the names of two other prominent cash-grain firms, to August 27, when their holdings were increased to over 9,000,000 bushels. These holdings were continued at that level through September 14. Thereafter Cargill's position was reduced somewhat, but at no time did it fall below 6,000,000 bushels.[10]

As the delivery month progressed, market strain continued to mount, with short sellers attempting either to offset their positions or obtain supplies for actual deliveries. These supplies were not forthcoming, in part because they were extremely scarce, but in part because, it was alleged, the meager supplies which were attracted to the market were promptly bought by the leading "long" by overbidding all competitors.

The effect upon the price structure was pronounced. On July 31 the September future closed 24⅛ cents above the December; on August 31 it was 35 cents above the December; on September 15 it was 42⅜ cents above. At the close of trading September 24 the Chicago Board of Trade officially discontinued further trading in the September future and fixed a settlement price for all unfilled

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Daily Trading Limits. 3. The limit on the maximum amount which any person may buy, and on the maximum amount which any person may sell, of any one grain on any one contract market any one business day, except as specifically authorized by paragraph 4 hereof, is: 2,000,000 bushels in any one future or in all futures combined.

4. To the extent that purchases or sales of any one grain on any one contract market during any one business day made by any person are shown to represent spreading, or the closing of spreads, in the same grain between markets, the limit set forth in paragraph 3 hereof may be exceeded on such contract market, but in no case shall the excess result in total purchases of more than 3,000,000 bushels, or total sales of more than 3,000,000 bushels, and in no event shall such person's total purchases or total sales, during any one business day, in any one future exceed 2,000,000 bushels.

The foregoing limits upon position and upon daily trading shall not be construed to apply to bona fide hedging transactions as defined in paragraph 3 of section 4a of the Commodity Exchange Act.

[10] G. Wright Hoffman, *Grain and the Futures Market, a 15-Year Survey, 1923-1938*, USDA Tech. Bul. No. 747, January, 1941, p. 69.

contracts at \$1.10½. This was 46½ cents above the close that day of the December future.

"Squeezes" continued to occur even during World War II. General Foods Corporation and other individuals, including Philip O'Brien, a former president of the Chicago Board of Trade, cornered the May rye futures on the Chicago Board of Trade in 1944. Beginning in December, 1942, General Foods built up a long position in rye futures and physical grain. In December, 1943, it took delivery on 1,880,000 bushels of December, 1943, rye futures. This brought its holding of rye grain in Chicago to 7,230,000 bushels, about 76 per cent of the total deliverable supply in Chicago at that time.

The business conduct committee of the Chicago Board of Trade ordered General Foods to acquire no more rye futures or grain; but the other gentlemen mentioned above on their own, or as authorized agents for the company, continued operations in rye during 1944. Canadian as well as other rye began to be drawn out of position to Chicago. The group extended its operations to Winnipeg. On May 27, 1944, it held 11,805,000 bushels of deliverable rye in Chicago—89 per cent of the total deliverable supply there—occupying about 50 per cent of the total public grain storage space in the city and congesting transportation facilities at a time when they were needed for more important war purposes.[11] The group is now under indictment by the USDA.

EFFECT OF VOLUME OF FUTURES TRADING ON PRICES

Opinions differ concerning the effect of a large volume of futures trading on cash grain. Many farmers believe that the cost of the large volume of futures trading exacts a toll from the physical grain in the channels of trade. "Every bushel of grain is sold twenty-five times over in the pit," they say, and go on to reason that the cost of this trading is borne by the physical grain; it shows up either in lower prices to the producer, or higher prices to the consumer, or both. This opinion is not endorsed by members of the Board of Trade. They hold quite an opposite view. Let us examine the farmers' beliefs first, and then turn to the opposing opinions.

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[11] United States Department of Agriculture Before the War Food Administrator, In re *General Foods Corporation, Charles W. Metcalf, Daniel F. Rice and Company, Daniel F. Rice, Lawrence J. Ryan, and Philip R. O'Brien. CE-A Docket No. 34. Complaint and Notice of Hearing under Section 6(b) of the Commodity Exchange Act* (mimeo.), USDA, undated.

EVERY BUSHEL IS NOT "SOLD TWENTY-FIVE TIMES OVER"

It is true that the volume of futures trading in wheat is about twenty-five times the volume of the cash trading in the terminal markets.[12] But it is not true that "every bushel of wheat is sold twenty-five times over;" neither is it true that the average bushel of wheat is sold twenty-five times over; far from it.

This becomes apparent if we trace a carload of wheat from the farm through the local elevator to the terminal market and the ultimate buyer. Let us suppose that an exporter located at Minneapolis is offering 70 cents a bushel for wheat at the Minneapolis market. He appears on the floor of the Chamber of Commerce of Minneapolis, and a commission man to whom a carload of wheat has been consigned from a local elevator man at, let us say, Brookings, South Dakota, sells him a carload of wheat at 70 cents. The commission man takes the exporter's check for the wheat, deducts his commission of 1½ cents a bushel, and remits the rest to the local elevator man at Brookings. The local elevator man receives 68½ cents a bushel for his wheat, minus freight and inspection charges. The "cost of speculation" does not enter in anywhere along the line between the price paid by the consumer for cash grain and the price received by the farmer.

Then where does the money come from if not from the physical commodity? It comes from the futures speculators and hedgers themselves. This is also made clear by tracing through a specific transaction, in this case in the futures market. A speculator buys, let us say, 10,000 bushels of July futures at 80 cents. He puts up 10 cents per bushel margin with his broker. The man from whom he bought may have been a hedger, selling a future to hedge a purchase of cash grain; he puts up a margin also. A week later, the price rises, and the original buyer now sells his 10,000 bushels at 85 cents. For simplicity, we will suppose that the original seller (the hedger) also closes out his trade, too. What happens? The original buyer's broker sends him a check for 14¾ cents per bushel (that is, the margin of 10 cents plus the gain of 5 cents, minus the ¼-cent brokerage fee for executing the sale and purchase); the original seller's broker sends him a check for 4¾ cents per bushel (that is, the margin of 10 cents *minus* the loss of 5 cents, minus ¼-cent brokerage fee for executing the purchase and sale; in his particular case the loss would have been offset by a corresponding rise in the price of the cash grain he owned). The cost of futures speculation came from the two futures traders themselves, not from the physical grain. The conclusion can be generalized to cover the whole body of futures trading.

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[12] Total receipts of wheat at "prominent western grain centers" (the bulk of the United States grain trade) average about 400 million bushels per year, about half of the average production of wheat. (*See* the Yearbooks of the Chicago Board of Trade.) The total volume of trading in wheat futures averages about 10 billion bushels per year (see *Agricultural Statistics,* 1940, USDA, p. 28).

DOES A LARGE VOLUME OF TRADING SUPPORT PRICES?

Some proponents of futures trading believe that a large volume of trading raises the price of cash grain. Some of them phrase their argument merely in terms of the volume of trading. Others concentrate on the buying involved; a large volume of buying, they say, raises prices in any market for futures contracts as well as for physical commodities.

We can for the moment overlook two obvious weaknesses in the buying argument: (1) The large volume of buying referred to is buying of futures contracts, not of physical cash grain, and (2) if there is a large volume of buying in the futures market, there is an exactly equally large volume of selling there too, since every purchase is bought from somebody who sold, and the supply of futures contracts is virtually unlimited. We can ignore these things, and turn to the market statistics showing the volume of trading in futures and the prices of cash grain, and see if there is in actual fact any positive correlation between them.

The seasonal United States average farm price of corn in December is plotted against the volume of trading in corn futures for the same month each year from 1923 to 1938, in Figure 30A. This chart shows that there is a fairly high positive correlation between the volume of trading in corn futures and the price of cash corn. (The correlation has been reduced in recent years since the coming of the ever-normal granary.)

But one must always be on his guard in drawing conclusions from statistical correlations. Correlation does not show causation, nor the direction of causation. Prices were high, in certain years shown in Figure 30A, not because the volume of futures trading was high, but because the size of the corn crop in those years was small. Prices were low in other years, not because the volume of trading was low, but because the corn crop was large. This is shown in Figure 30B, where the size of the corn crop is plotted along with the season average price each year. The negative correlation between the two is evident. It is well known that high prices attract attention to the speculative market, and low prices chill speculative fervor. The real sequence of causation, then, is not (C) large volume of futures→(B) high corn prices, but (A) small crop of corn→(B) high prices→(C) large volume of futures trading.

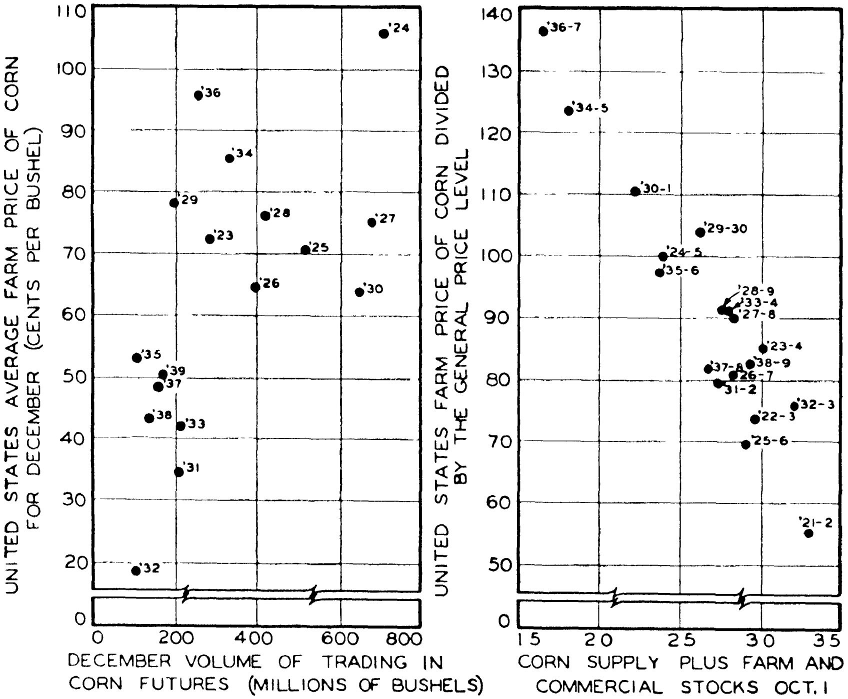

FIG. 30.—(A) Relation between United States average farm price of corn December 15 and the total volume of trading in corn futures in December, 1923-38.

(B) Relation between adjusted United States average farm price of corn, October-September, and United States corn production, 1921-38.

(Data from *Agricultural Statistics,* USDA, 1931 and 1939, and *Feed Statistics* (mimeo.), BAE, USDA, February, 1940, p. 37. The corn price in section B is deflated by the Bureau of Labor Statistics in index of all-commodity prices at wholesale (×1.7-70).

DO BIG SPECULATORS HELP CARRY THE HEDGING LOAD?

Under the Grain Futures Act, passed in 1922, and the Commodity Exchange Administration Act passed in 1936 (which changed the name of the administrative body from the Grain Futures Administration to the Commodity Exchange Administration and gave it wider powers), each commission firm executing trades in futures must report daily to the Commodity Exchange Administration the long and short position of its clients as a group, and its volume of futures trading. These figures are reported merely as totals, disclosing no trader's name or individual account. If, however, any individual trader is net long or short 200,000 bushels or more in any one future or any one grain, his volume of trading and position on every futures market, domestic and foreign, must be reported to the Commodity Exchange Administration.

Arguments have been made that these individual reporting requirements discourage the activities of large traders, who do not like to have their activities reported to the government. If these large speculators are driven out of the market, it is charged, that will remove a "constructive force" supporting prices, because the large speculators are usually "on the long side of the market." This helps to "carry the hedging load" of grain dealers who buy cash grain and hedge their purchases by selling the same number of futures contracts.

The Grain Futures Administration (now called the Commodity Exchange Administration) met this argument in 1933 by publishing a chart showing the net long or short position in Chicago wheat futures of speculators having commitments of 500,000 bushels or more, for the period April, 1930, to October, 1932.[13] This chart showed that the net position of these large traders, as a group, was *short* 83.6 per cent of the time, and furthermore, that their occasional net long positions were long by only small amounts. That is, during this period, the large speculators, far from supporting the market by "carrying the hedging load" were depressing the market by adding to the hedging load.[14]

It would be possible for the Board of Trade to rebut this argument by pointing out that it applies only to the period covered in the chart. The annual reports of the Commodity Exchange Administration have shown that during some of the years since that period, the large speculators have been long more than they have been short. But the Board of Trade has not made this rebuttal, to our knowledge, perhaps because if they did, in disposing of the one charge, they would lay themselves open to another—namely, that the big speculators are on the short side of the market, pushing down on prices, at times when price levels are declining (as from April, 1930, to October, 1932, the period covered in the Commodity Exchange Administration chart) and on the long side of the market pulling upward on prices, at times when prices are rising (as from 1933 on). This would mean that the buying and selling of the big speculators operates, not to reduce market fluctuations, but to increase them.

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[13] Senate Document No. 61, *Suspension of Reports of Large Speculative Accounts in Grain Futures,* 73rd Congress, 1st Session.

[14] Furthermore, "Data collected by the Grain Futures Administration show that, during five of the eight years covered by the period 1925-32, the combined net position of sixteen large speculators in Chicago wheat futures was principally on the short side of the market during the months of July to October when country marketings are the heaviest."—Paul Mehl, "Trading in Futures and Price Fluctuations," *Journal of Farm Economics,* Vol. XVI, No. 3, July, 1934, p. 488.

DOES SPECULATION STABILIZE PRICES?

That brings us to the final question—is there any statistical evidence that speculation stabilizes prices?

We have touched on this question before. It will be sufficient here to show a chart prepared by Paul Mehl of the Commodity Exchange Administration (Figure 31). This chart shows the number of price changes each day and the volume of trading on the same day, over a period of 2,069 days from January 2, 1924, to December 31, 1931, excluding 1926 and part of 1925 when "old" and "new" style futures were being traded in. Each dot represents the volume of trading for one day and the number of ⅛-cent price changes that occurred on the same day. The hollow circles represent averages of the individual dots by 5 million-bushel class intervals. The correlation is positive, showing that a large volume of trading is associated with numerous changes in price, not with stable prices.

Care needs to be taken here in interpreting this correlation, the same as with the preceding charts. One cannot conclude merely from study of the chart that a large volume of trading causes unstable prices; nor can one conclude that the causation runs the opposite way. Whatever conclusions are drawn will have to be based on a knowledge of futures trading and on economic reasoning, plus the statistical information shown in the chart. But at least, in view of this chart, one is not likely to accept uncritically the argument that a large volume of trading and stable prices go together.

APPRAISAL

It seems evident that the futures trading on the large terminal markets merits neither the blame that has been heaped upon it for causing large fluctuations, nor the praise that has been bestowed upon it for its alleged stabilizing force. Actually, it appears to have very little effect either one way or the other, except perhaps to accentuate

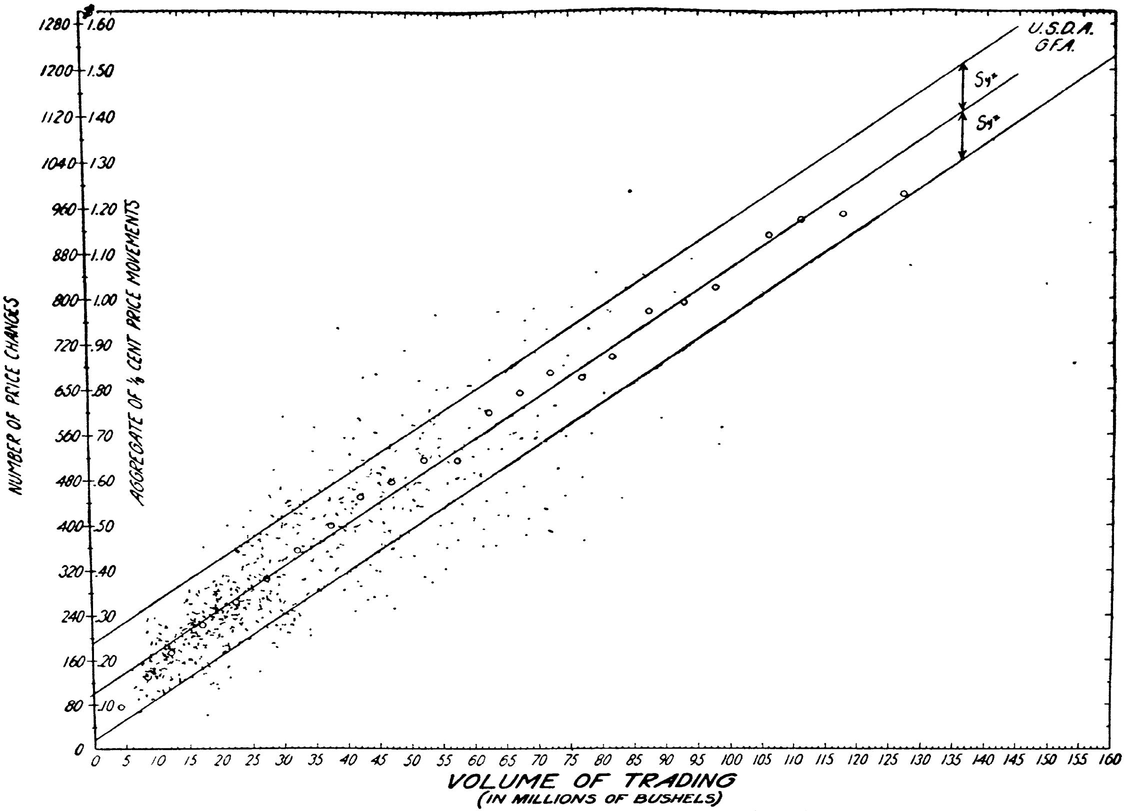

FIG. 31.—Relation between number of price changes and volume of trading in futures, January 2, 1924, to December 31, 1931. (Courtesy of Commodity Exchange Administration.)

small, short-time fluctuations. Various technical internal features of the futures market's operation have deserved and received correction, partly voluntary and partly enforced by the government. Hedging probably narrows the grain handling margin, by enabling the grain operator to shift most of his price risk to others. Occasional "squeezes" still occur, and small short-time (hour to hour or day to day) fluctuations may be accentuated by speculation. But except for these things the effect of futures trading on prices is not very great.

The futures markets in any case are becoming less important as the stabilization programs of the federal government expand. Even before the war, the Commodity Credit Corporation was making loans up to about a billion dollars a year on the so-called "basic" crops—cotton, wheat, corn, tobacco, rice, and peanuts. This represents a direct attack on the problem of unstable agricultural prices. Hedging provides some protection against fluctuations in prices, but the stabilization operations of the Commodity Credit Corporation are designed to reduce or eliminate the fluctuations. To the extent that they succeed, hedging and speculation will become less necessary and less important. A substantial decline in futures trading had taken place by 1941, before the United States became involved in war.[15] It seems likely that this decline will continue in the future.

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[15] "To give you an idea of the drop in futures trading of wheat, the January, 1941, total trade was 179,542,000 bushels, as compared with 610,000,000 bushels in January a year ago, and 1,700,817,000 bushels in 1925. I believe this volume, and our open interest in all commodities, are about the lowest since records have been kept.

"The trade in other grains is in a comparable ratio with the trade in wheat, with the exception of soybeans. Trade in this commodity has been built up in the last few years, and the volume for January, 1941, was 40,884,000 bushels"—Philip R. O'Brien, President of the Chicago Board of Trade, address before the Agricultural Division, Chicago Association of Commerce, March 4, 1941.

CHAPTER 11

The Price Surface in Decentralized Markets

The four preceding chapters were all concerned with changes in prices over periods of time. The present chapter deals with a different sort of problem—price changes in *place;* that is, changes in prices at one point relative to prices at other points. The price of a product at one market point may rise, at a time when prices at other markets may remain constant, or decline. It pays to select the highest net market point in place as well as in time.

The rise of decentralized markets discussed in earlier chapters has accentuated this problem of place. It has confronted farmers with two new marketing problems: (1) the job of picking out the highest net price point in the decentralized market area, and (2) the problem of determining the effect of direct marketing on the general price level of the commodity. These two problems will be dealt with in order. The first one is discussed in the present chapter, and the second one in the next chapter.

SELLING IN A DECENTRALIZED MARKET

Under the early local-and-central-market system, the problem of market selection was simpler than it is now. Farmers merely had to choose between selling to a local buyer or consigning to the nearest terminal market. The short-time (day-to-day) shipping time problem could scarcely be handled at all; current market news was so scarce, and the distances to the terminal markets were so great that it was almost impossible for farmers to respond quickly to short-time (day-to-day) changes in prices.

The situation is different today. Farmers now can choose among many outlets for their livestock. The present day decentralized marketing system offers farmers access, not only to the distant terminal markets, but also to numerous local markets close at hand. Usually, several of these local concentration points and interior packing plants are located within easy trucking radius of any one point, while the more distant markets can be reached by rail, as before, either directly by individual farmers or through a local dealer or a cooperative shipping association. The plentiful market news now available enables farmers to keep more or less in current touch with these numerous local markets within the broad decentralized market that covers the whole country.

The price surface over the broad nation-wide market is of course not flat. There is a good deal of geographical specialization of livestock production, and the heavy livestock-producing areas do not coincide with the heavy meat-consuming areas. Two-thirds of the cattle, for example, are produced west of the Mississippi, but only one-third of the beef is eaten there; the other one-third is shipped across the river to the heavy consuming areas in the east. The price surface is therefore flat plus or minus transportation charges from the surplus to the deficit areas. Figure 32 shows the situation for hog prices.[1]

The chart shows the average prices by areas over the period of ten years from 1925 to 1934, inclusive. The spread of $2.50 per 100 pounds, from $6.75 at the bottom of the price valley in North Dakota to $9.25 at the top of the price peak in the area surrounding New York City, corresponds roughly with the cost of shipping from the one area to the other.[2] The market appears to measure up reasonably well to the ideal of perfection with respect to place.

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[1] This figure is taken from A. R. Gans and R. F. Hale, *Regional Variations in Prices Received by Farmers 1925-34 for Ten Selected Commodities* (processed), Farm Credit Administration in co-operation with the Bureau of Agricultural Economics, 1939, p. 10.

[2] This statement needs some qualification. The low price areas in the South do not have much significance, since so few hogs are raised there. The freight rate from Fargo, N. D., to New York City on double deck hogs is $1.00 per 100 pounds (letter from W. R. Sedin, November 20, 1940. Freight rates have not changed much during the past ten years). The cost of assembling hogs at the local shipping point in North Dakota would be about 10 cents per 100 pounds. Most hogs moving from North Dakota to New York would be consigned to South St. Paul by the farmer, sold there, and reshipped to New York. It costs 21 cents per 100 pounds to put hogs through the market at South St. Paul (*The Direct Marketing of Hogs*, p. 192). These charges total $1.31. The "cost" of the "shrink" of the hogs on the journey is difficult to estimate in dollars and cents; it might be set, for purposes of definiteness here, at 20 cents per 100 pounds. The total costs then are $1.51, whereas the difference between the prices of hogs at Fargo and New York is shown in Figure 32 to be about $2.15. There is a gap between these two figures of 66 cents, which is surely more than could be attributed to differences in grade. There must be other costs that have not been taken into account.

It is interesting to note that during recent years the difference between the North Dakota and New York hog prices has narrowed. This is shown by a comparison of the state average farm prices for hogs for North Dakota and for New Jersey (which lies in the center of the price peak area in Figure 32). The difference between the two prices was $1.70 in January, 1939, and $1.80 in October, 1940. This is only 20 or 30 cents wider than the costs computed above.

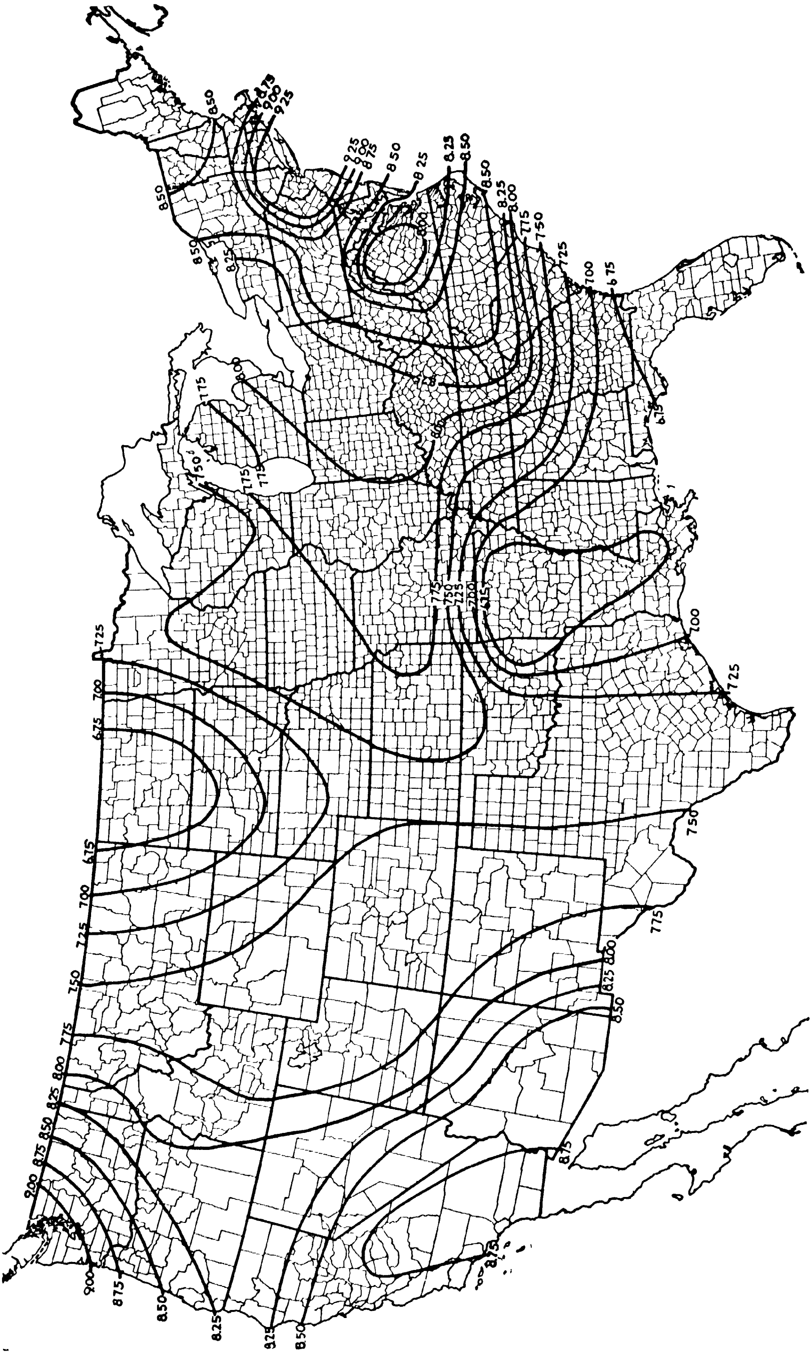

FIG. 32.—Average prices received by farmers for hogs, 1925-34 (dollars per hundred pounds).

MARKET PRICES FLUCTUATE RELATIVE TO ONE ANOTHER

But this perfection represents only the average behavior over a period of ten years. For shorter periods of time—from month to month or day to day—the situation is different. The water in the ocean averages flat over a period of time, but for short periods of time, tidal movements raise some areas above and depress other areas below the average level, storms sweep across the tidal movements, and ripples ride the surface of the waves. So it is with the prices at the local markets over the country. The price surface heaves and sinks, billows and ripples; it is never still.

The prices at different markets fluctuate in relation to each other because of the fluctuations in local supply and demand at each point. The packer's sales of his pork products, which are the basis of his demand for hogs, fluctuate from day to day and from week to week. His receipts of hogs fluctuate in response to changes in local supply conditions. The only way he can keep the supply of hogs adjusted to his demand for them is to raise or lower his prices relative to the prices at other markets. When he wants more hogs, he raises his price; when he has too many, he lowers it.

It makes a good deal of difference, therefore, which market the farmer chooses. Sometimes one market will net 10 or 20 cents higher than another; sometimes it will net 10 or 20 cents lower. This is shown in Figure 33, which shows the day-to-day fluctuations in differentials between prices (1) at Chicago and at an interior packing plant (Plant A) in the country in the Iowa-southern Minnesota area, (2) between Sioux City and another interior packing plant (Plant B), and (3) between two interior packing plants (Plant B and C) in 1933.[3] Current data available in the daily press for the years since 1933 show similar fluctuations in the market price differentials. These changes in differentials range as high as 50 cents per 100 lbs. Changes of this magnitude are matters of considerable importance to a man with a truckload of hogs to sell.

DIFFERENTIALS BETWEEN TERMINAL MARKET PRICES

Relative prices also vary between the different terminal markets. The day-to-day fluctuations in differentials between several terminal markets are about as large as those shown in Figure 33. In general, the closer the markets are to each other, the less is the fluctuation in differentials between them. This is shown in Figure 34.

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[3] Charts 33–35 are reproduced from *The Direct Marketing of Hogs,* USDA, Misc. Pub. 222, 1935, pp. 165 and 159, respectively.

Medium and Long-time Movements. Hog price differentials change not only from day to day, but also from month to month and year to year. There are tides and long swells, as well as waves and ripples, on the price surface. The changes in the relationship between hog prices at several different terminal markets and Chicago over the years from 1920 to 1933 are shown in Figure 35. Part of the changes from year to year may be explained by changes in costs of transportation and handling, but the short-time variations from month to month cannot be thus explained. They appear to result from maladjustments between relative demand and supply. An

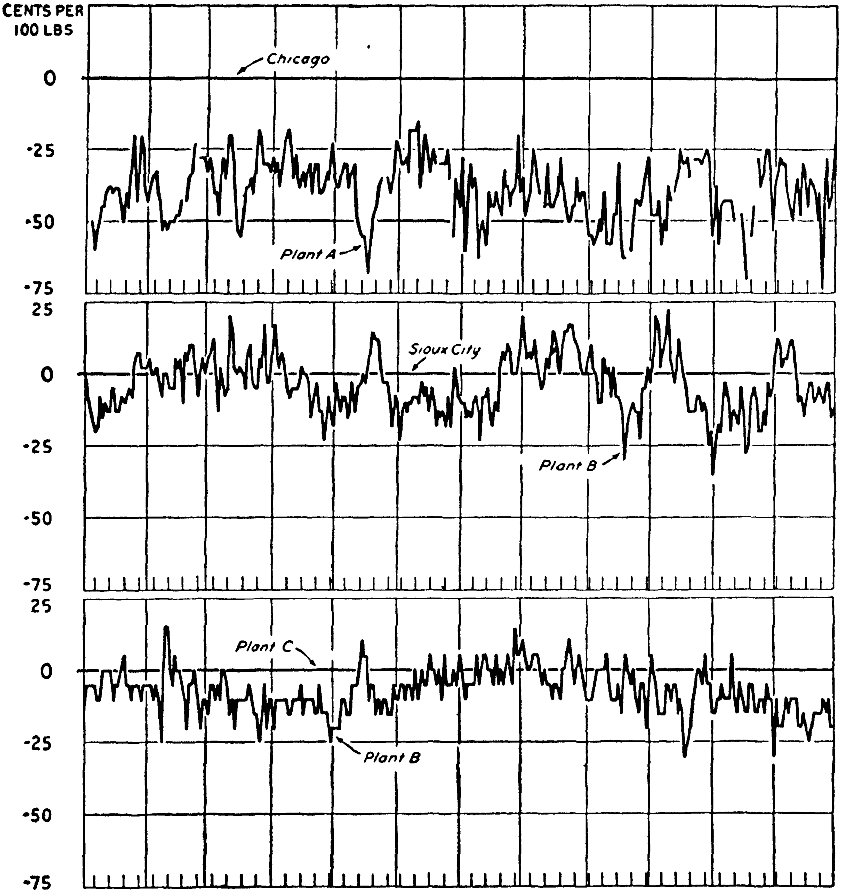

FIG. 33.—Day-to-day hog-price differentials between Chicago and plant A, Sioux City and plant B, and plant C and plant B, 1933.

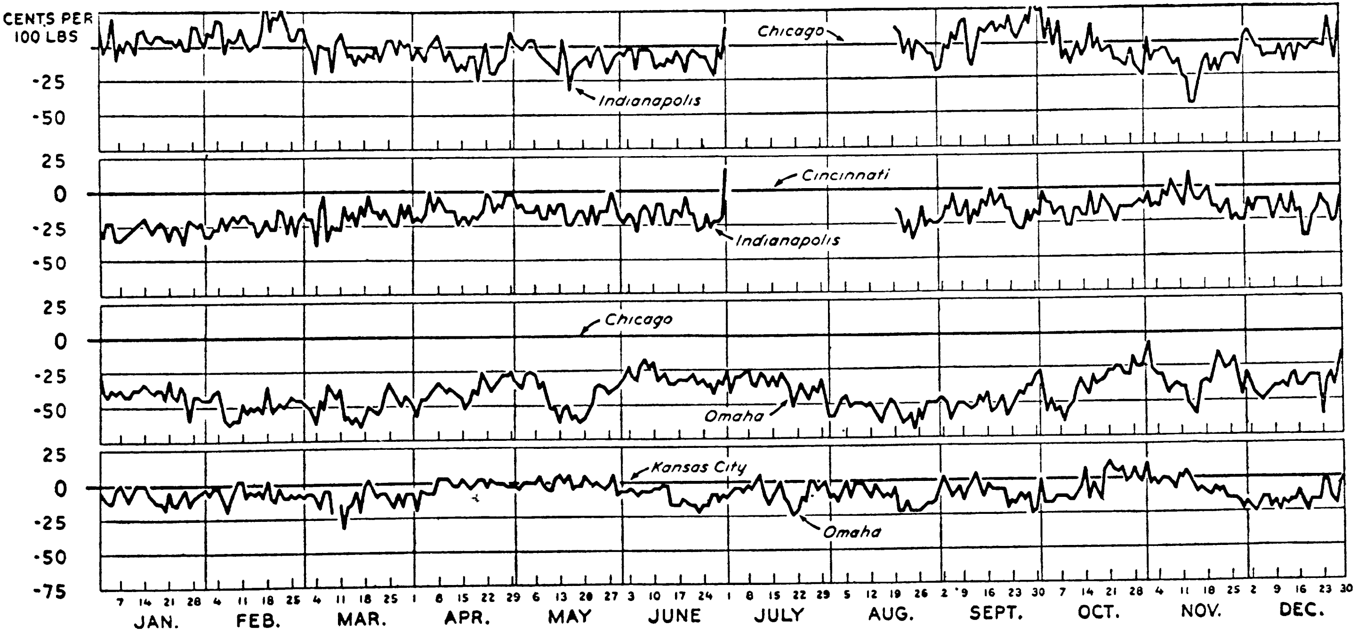

FIG. 34.—Day-to-day hog-price differentials between Chicago and Indianapolis, Cincinnati and Indianapolis, Chicago and Omaha, and Kansas City and Omaha, 1933.

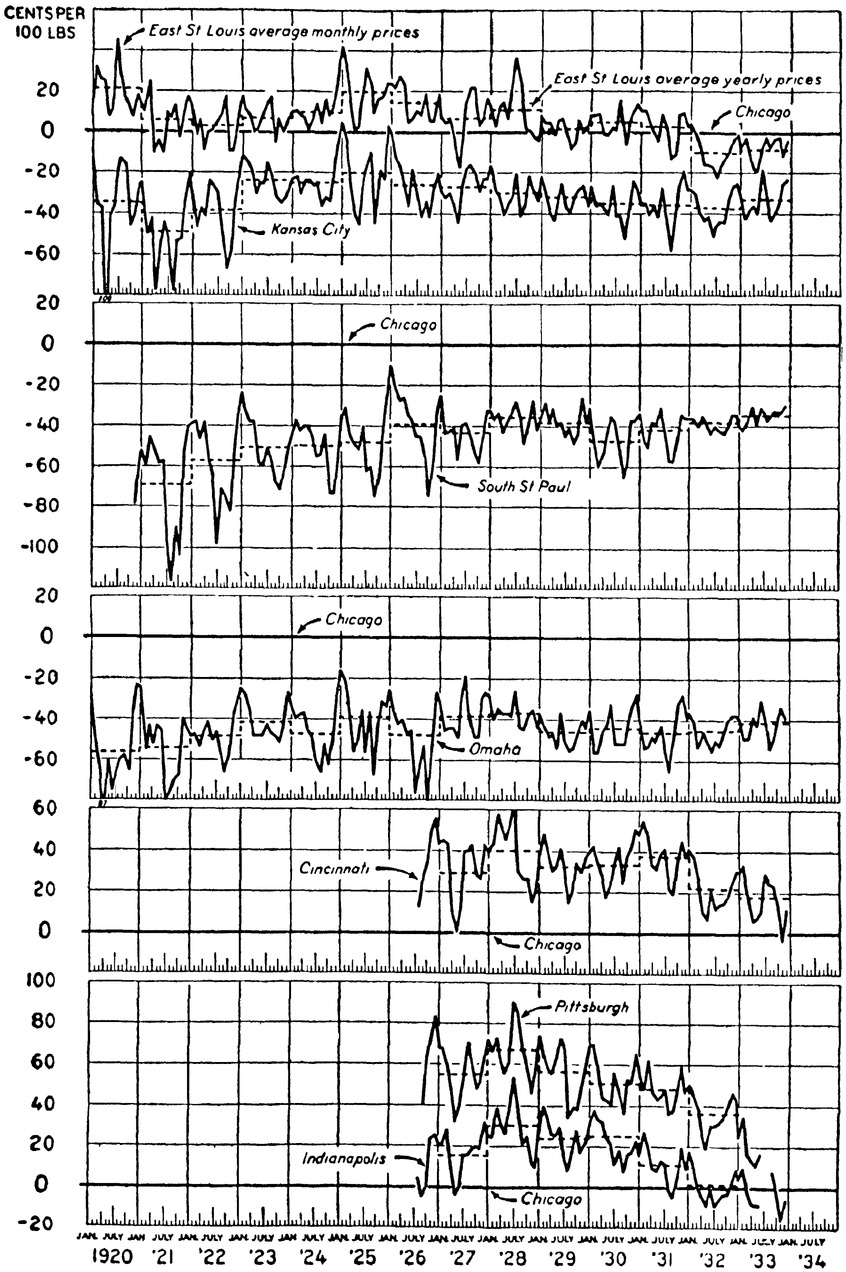

FIG. 35.—Monthly and yearly hog prices: differences between Chicago and seven other public markets.

interesting regular seasonal variation is observable in the South St. Paul price line. This seasonal variation is much less pronounced in the later years than in the years before 1928. A similar seasonal swing used to be observable in the relation between interior packing plant prices and Chicago prices.

WHY DOES THIS SPATIAL IMPERFECTION EXIST?

The broad market for hogs covering the heavy hog-producing and consuming areas apparently falls short of perfection with respect to place. The price surface is swept by ripples, waves, and tidal movements. The short-time imperfections result partly from lack of information and partly from time lags in supply responses. The terminal markets have an excellent price-reporting system, but much of their trade territory is several hundred miles away, and adjustments of supply and demand involve time lags of a day or more. The interior markets are free from this distance-and-time handicap, but their price-reporting system is not so specific as the system at the terminal markets. Prices and supplies are reported over the radio by federal market reporters, not by individual interior plants but only by areas, which divide Iowa and southern Minnesota into three parts and in fact are most often lumped together in one state-wide area. It appears that livestock producers need more market information before they can keep close enough track of the relative price movements in different markets to offset them with increased or decreased shipments.

This statement does not carry any implication that prices should be more uniform in space than they are at present, with local supplies and demands continuing to fluctuate as they do now. The existing fluctuations in prices are all that keep those fluctuations in amounts supplied and demanded with bounds. What is required is some means by which farmers could direct the geographical distribution of their supplies so as to meet the fluctuations in demands more accurately and thus keep the price surface more nearly uniform. At present there is no overhead agency to help farmers accomplish this end, except the federal livestock news reporter stationed in Des Moines, and his usefulness is limited for the reasons given above—that he reports prices only by districts in the state, not specifically by individual packing plants. The individual packing plant quotations are published in the press the following day and in some cases are broadcast currently by radio three or four times a day, by the hog buyers concerned, but these reports have their limitations.

The limitation of the federal district price broadcasts is that they specify only the area in which certain prices are being paid. All that the farmer or trucker can do is take his hogs in this or that general direction, without any specific information as to just who in any area is paying the price given. The limitation of the newspaper individual packer quotations is that they are a day late. The limitation of individual packer radio broadcasts is that only a few are available, and if more (six or eight) were offered, it would be difficult for a farmer to catch them all in the air at once with one receiver. Furthermore, there is no way of checking on the accuracy of the individual packer quotations which are put out by the packers themselves. There seems to be a definite need for a new type of market reporting adapted to the direct market—an overhead farmer or governmental agency to broadcast the livestock market news for the whole area in more specific terms than at present—to bring the decentralized livestock market closer to perfection with respect to space.

Under this system, the market reporters could indicate the areas where livestock prices were high or low. It would then be up to each farmer to call two or three points in the indicated high price area and get specific bids for his particular lot of livestock. This combination—the market news reporter's information by areas, plus the farmer's own efforts within the area—would enable farmers to locate the highest price points before they shipped their livestock.

Perhaps this is about as far as market reports can go, while livestock continues to be sold by live weight and grade. If the basis were changed from live weight to carcass weight and grade, certified by government graders in the packing plants, as discussed later in Chapter 17, substantial further improvement would be possible. Government reporters at the plants could ensure accuracy in the individual plant's price broadcasts, making them comparable with the terminal market reports; and government carcass weighers and graders would ensure accuracy and impartiality in weighing and grading the carcasses. Farmers then would not need to telephone, bargain, or dicker at all. They simply would compare the reports from the different points, choose the highest, and take their hogs there, much as the housewife now compares prices at different stores by reading the Thursday advertisements in the local paper, and then proceeds to buy or order from this or that store without attempting to bargain or dicker about the price.

This would bring the market close to the competitive ideal. A market should be a place where all the buyers and sellers are equally well informed and full publicity is given to all transactions, and the object is, not to take advantage of others' ignorance, but to play the game with the cards face up on the table. The advantage in such a game goes to the man with the best cards. That is, the advantage goes to the most efficient plant operator and distributor, as it should, not to the best bluffer or to the one who knows best how to take advantage of the other players' less adequate information.

This kind of a market lacks the color and sparkle that comes from the clash of different personalities in rough and ready economic combat. It operates merely in the plain white light of full publicity, where personalities count for little, and only the facts prevail.

CHAPTER 12

Influence of Decentralized Marketing on the Price Level of a Commodity

Does direct marketing have any effect on the general price level of the product?

There are two ways in which it might have an effect. In an industry where the buyers and sellers are comparatively few, they may prefer to enter into more or less permanent contracts with each other, using prices that are not bargained for afresh at the time of each sale, but are set once for all at so much under or over the basic central market price whatever that price may be. In such a case, if the volume of direct sales becomes large and the volume of terminal market sales small, the price at the terminal market may not be as representative of total demand and supply conditions as it should; yet being used as the basic settlement price, it may affect the prices for most of the total supply.

In cases where the buyers and sellers are numerous and do not trade on the basis of continuing contracts, some observers feel that the growth of direct marketing might affect the price level by reducing the competition at the central markets, weakening the price there and thus weakening the price structure over the whole market area.

These two situations are well illustrated in actual life—the first in the butter trade, and the second in the livestock trade. They are taken up in this chapter in that order.

EFFECT OF DECENTRALIZED MARKETING ON BUTTER PRICES

Decentralized marketing appeared early in the butter trade. The prices quoted at the central markets not only represented sales at those markets, but in addition were used as a "trading basis" or "settling basis" for the butter sold "direct," off the central markets.

This use of the central market price quotations as a settling basis for "direct" sales simplified the price-determining process considerably, for the direct sellers. "For example, a wholesale butter dealer in Chicago makes an agreement with an Iowa or Wisconsin creamery to take its butter week in and week out at one-half cent over the Chicago quotation, delivered at Chicago. The wholesaler may also make an agreement with a jobber to sell a certain number of tubs each week from this particular creamery at say one-half cent over the quotation. The jobber may in turn agree to supply a retail store with this same butter each week at two cents over the quotation. The quotation has been used as a trading basis; instead of having to make separate bargains each day or week, the dealers involved simply carry out the agreements from week to week without haggling about prices; time is saved and less sales and buying effort is required. This use of the quotation as a trading basis facilitates the marketing process."[1]

In the livestock and grain trade, a large proportion of the sellers (consignors) at the central markets are individual farmers. In the butter and poultry and egg trades, however, the sellers are usually creamery managers; in many cases (especially where selling is concentrated in the hands of a district sales organization) the seller deals directly with the buyer, without going through the central market. These "direct" sales do not show up in the central market receipts and price quotations. A large proportion of these sales, however, are made on the basis of the prices established at the central market—at so much over or under the central market quotation. It becomes imperative, therefore, that this central market quotation accurately reflect the prices at which the bulk of the commodity is being sold on the central market (or would be sold if the commodity were not moving direct from seller to buyer.)

Several methods have been used to insure accuracy in price quotations. One is the "call-board" method, by which dealers come together on the trading floor at a specified time and make bids to buy and offers to sell. If a large proportion of sales were made at the prices bid and offered, as on the grain exchanges, the "call" would represent actual prices accurately. But it is precisely because a large proportion of the trading is not thus made public that the "call" system is instituted, to bring some indicator of prices to light. Where the volume of business transacted at the "call" is very small, however, the method is unsatisfactory.

In some cases, the quotation committee method has been used. These quotation committees are usually composed of dealers who are in touch with market conditions and might therefore be expected to quote prices which accurately reflect those conditions. But, as a matter of fact, the quotation committee method is susceptible to abuse; the traders who constitute the committee are apt to be influenced by their own positions as buyers and sellers. The Elgin Board, for example, was for some time dominated by producers of butter, and their influence was exerted upward on the price quotation; at another time, an influx of Chicago traders had an opposite effect. In this and other cases, the committee price quotation was finally attacked in court as fraudulent information, and enjoined.[2]

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[1] F. E. Clark and L. D. H. Weld, *Marketing Agricultural Products*, MacMillan, 1933, p. 333.

Thus, even before World War I, the central market system for butter, eggs, and poultry was beginning to feel the effects of competition of a different system—sales made direct between seller and buyer, or decentralized marketing. After that war, the movement was accelerated. Cooperative creameries developed large-scale overhead selling organizations like Land-O'Lakes, Challenge, and the Iowa State Brand Creameries, and these reached forward to the retailer without going through the central markets. From the other end of the marketing system, the chain stores reached backward to the individual creameries and to their selling organizations, also going around the central markets. Mergers and consolidations of private butter producers and dealers also took place. The bulk of the butter today is marketed direct. Wholesalers and jobbers have combined, and thereby taken one link out of the distribution chain, but even so they handled only 36 per cent of butter sales in 1935. In that year about 55 per cent moved direct to the retailer or large-scale user, and marketing of the remaining 9 per cent was integrated all the way to the ultimate household consumer.[3]

During recent years the amount of butter traded in the central or terminal markets has declined so greatly that the question is now being raised whether the volume is great enough to warrant quoting their prices at all.[1] The bulk of even the wholesaler-jobber's business is handled on the premium-over-the-market-quotation basis. "Direct purchasers have offered premiums to divert the butter from the central markets and the central market receivers have had to meet the premiums in an effort to retard the shift. . . Today virtually all butter is sold to receivers on the basis of an agreement. The receiver agrees to pay a price based on a specified wholesale quotation as reported at a specified time for a specified market"[5]—a quotation which has not been established at the time the agreement is made.

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[2] Clark and Weld, *op. cit.*, pp. 339-41.

[3] William H. Nicholls, *Postwar Developments in the Marketing of Butter*, Iowa Agr. Exp. Sta., Res. Bul. 250, 1939, p. 370.

[4] L. M. Davis, "Fewer Open Market Butter Sales," *The Agricultural Situation*, USDA, July, 1937, pp. 19-20.

The prices at which a very small amount of butter is sold on the open market therefore become the basis for the prices of all the rest of the butter. A very small tail appears to wag a very large dog. The question is now being raised, therefore, whether the prices of this small amount of butter are representative and accurate enough to serve as a basis for settlement for all the rest of the butter—whether some means should be found to make the price quotations more representative, or whether they should be discontinued altogether and some more adequate basis for butter price settlement devised.

It is not a sufficient answer to say that the thing will take care of itself—that if the quotation is too low, competition for supplies will force the market price up; or if it is too high, butter will pile up in storage. There are too many monopoly elements in the butter distribution system. The price quotation might lower prices to producers without lowering prices correspondingly to consumers.

No simple answer to these questions has been offered. Paul Quintus believes that the practices described above have not affected the level of wholesale butter prices. His general conclusions are:

"The widespread existence of premiums can mean only that the wholesale quotations understate the true value of the bulk of the wholesale transactions. There is an increasing sentiment among traders and others that the industry would benefit from the use of a quotation which more nearly represented the value of each grade of butter. This is simply another way of saying that the premium system probably is not to the best interests of the trade. In general, devices which have their origin in competitive practices outwear their usefulness and react against the whole industry, once the practice becomes universal.

"It is equally clear that the premium system inherently has certain pernicious effects from the standpoint of the seller. There are so many direct and indirect ways of introducing a premium into the sale that more or less confusion prevails among creameries as to their best outlet. There is ample evidence that creamery managers attach considerable significance to the apparent amount of the premium and may actually go so far as to place more importance upon it than on the actual net returns for the butter.

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[5] Paul E. Quintus, "Wholesale Butter Prices and Premiums," *Journal of Farm Economics*, Vol. XXI, No. 1, Part 1, pp. 595 and 600.

"But whatever the undesirable features of premium payments, or any other important trade practice, may be, it is certain that any program designed to correct the apparent evils must rest upon a thorough knowledge of the fundamental reasons for the existing system. Unless all these conditions are understood, there is danger of advocating a new method which might work to make the situation worse."[6]

It might be possible to get the trade to report the prices paid to country creameries on an f.o.b. Chicago basis, if butter were commonly sold on uniform federal or other grades so that the prices would be directly comparable. This would enable country creamery operators to compare the prices they received with the prices that were being paid other creameries for the same grade. It would be necessary also to make allowances for various private agreements concerning such services as packaging the butter in cartons, which might be included in the price, or to standardize such services. Problems of this sort would need to be worked out, preferably in consultation with the trade, before the new type of quotation would be more accurate, as well as more representative, than the old.

THE EFFECTS OF DECENTRALIZED MARKETING ON LIVESTOCK PRICES

The decline in the volume of livestock sales at the terminal markets that resulted from the increase in direct buying of livestock hit the terminal commission firms hard. It also began to create an insecure feeling in farmers' minds with respect to the determination of prices. Previously, farmers had always looked to Chicago, approvingly or otherwise, for price leadership. It seemed to them that prices at the local market depended on Chicago prices. If the decline in volume of sales at Chicago and the other terminal markets continued, perhaps to the point of complete disappearance, what would happen to local prices then? Would not the whole price-determining system go to pieces?

The issue never became important in the grain trade, but in the livestock trade it assumed major proportions. The effect of direct marketing on the general level of hog prices became a highly controversial question. The rise in hog prices following the drouths of 1934 and 1936 temporarily lessened the controversy, and high wartime prices during the 1940's also kept it quiet; but with the return of peace the issue may come to life again.

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[6] Quintus, *op. cit.,* p. 605.

The livestock commission men at the terminal markets, who see their volume of business and therefore their income sharply reduced by the growth of direct buying, are naturally opposed to direct buying. The packers, who have expanded their direct buying, presumably because it pays them to do so, just as naturally defend their practices. On the sidelines, livestock growers watch the combat with mixed feelings. Many are suspicious of the packers. Sellers are always inclined to believe that buyers are getting the best of them, especially when the buyers are large and powerful corporations. They are more inclined to listen to the commission men, who are their sales agents, than to the packers. Accordingly, the arguments against direct packer buying have met with at least a favorable reception from numbers of livestock growers.

The arguments against direct packer buying are many and various. They may be summarized, however, under three separate heads.[7]

1. Direct packer buying at interior country points takes the cream of the crop. The rest of the hogs, the lower grade hogs, go to the terminal markets, and establish low prices there. These low prices in turn are reflected in low country prices, and all hog prices decline.
2. The terminal markets are competitive markets; where there are numerous buyers at one market, there is active competition. But when hogs are bought direct, there is usually only one buyer where the hogs are bought. There is no competition. Hog prices suffer accordingly.
3. When packers buy a substantial proportion of their hogs direct, out in the country, that reduces competition (i. e., demand) at the terminal markets, and results in lower prices there; and since hog prices are based on Chicago prices, this lower price at Chicago reduces prices over the whole producing area, interior and terminal markets alike.

The first argument is the least important, and can be most definitely answered. We will accordingly deal with it first.

The federal government in 1934 made an extensive investigation of the direct marketing of hogs.[8] It paid special attention to this first question, concerning the grades of hogs purchased direct. A group of qualified hog graders visited various markets in the course of this study and graded nearly 200,000 hogs, at 132 markets distributed over the 15 leading hog-producing states. The results of their grading showed that the grades of hogs purchased at the two kinds of markets, the public terminal markets and the interior (direct buying) markets, in percentage form were as follows:[9]

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[7] One of the most illuminating pioneer studies of direct packer buying is Paul L. Miller, "The Relation of Direct Marketing to the Determination of Prices," *American Cooperation,* Vol. II, 1931, pp. 92–115. Perhaps the best presentation of the arguments against direct packer buying is given in R. C. Ashby, *Local Livestock Markets in Relation to Corn Belt Hog Marketing,* Illinois Agr. Exp. Sta., Bul. 408, 1934. Another presentation is given in George Henderson, *Short Cuts to the Hog Market,* Colorado Agr. College, Bul. 336-A, 1934.

	Choice (Percentage)	*Good* (Percentage)	*Medium* (Percentage)	*Cull* (Percentage)
Public markets	15.4	50.7	30.4	3.5
Interior markets	15.6	51.1	30.9	2.4

Because of the outstanding importance of the Chicago market, a special check was made of the grades of hogs received as direct purchases and for sale at the public stockyards at that market where 56,051 hogs were graded, of which 36,150 were public market hogs and 20,901 direct purchases. The percentage distribution of these was:

	Choice (Percentage)	*Good* (Percentage)	*Medium* (Percentage)	*Cull* (Percentage)
Consigned for sale....	19.3	41.7	33.8	5.2
Bought direct	15.5	40.9	40.9	3.7

The results of this study show that the interior markets do not take the cream of the crop. If anything, a higher percentage of high quality hogs are purchased at Chicago than at interior points; the statement in the first argument given above is therefore incorrect.

WHAT IS COMPETITION?

The second argument, that there is no competition when hogs are bought direct, implies that competition exists only where several buyers are physically present. But competition—that is, offers to buy or sell—is not restricted only to those who are physically present. If a buyer comes to my farm and offers $7.00 per 100 pounds for my hogs; and I pick up my telephone, and get a bid from another buyer, fifty or a hundred miles or more away, of $7.50, or listen to my radio and hear that prices are higher at other points, there is competition for my hogs right on my farm, just as if the buyers were physically present. In fact, I am in a stronger position with my hogs on my farm than if they were at a distant public market.

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[8] *The Direct Marketing of Hogs,* USDA, Misc. Pub. No. 222, 1935.

[9] *Ibid.,* pp. 18-19.

"At public markets, the competition is for a supply of hogs that is physically present, largely out of the control of the producers, and under the necessity of early sale. At interior buying points it is a competition to draw hogs, that are still under the control of the producer, to different points. Competition at public markets is more apparent than at interior points since relatively large numbers of buyers and sellers in personal contact are readily observable at the former, while at the latter the chief evidences of competition are the posted prices and the telephone or personal requests being received for bids on hogs. But to the producer at home, with hogs for sale, the latter competition is more useful since he is in a stronger position opposite the buyer with his hogs still at home than he would be if they were at a public market and had to be sold."[10]

WHAT IS "A MARKET"?

The third argument, that direct packer buying reduces the demand and therefore the prices at the terminal markets, and thereby reduces the general level of hog prices, is more difficult to evaluate in simple and concrete terms. If it is considered against a background of economic theory, however, the outlines of the elements involved stand out more clearly. The economic theory involved deals with price determination in present-day markets. And this requires a clear understanding of just what is "the market" in which hog prices are determined.

In Appendix A, dealing with the concept of the perfect market, it is shown that economists, as well as others, are guilty of some confusion in defining a market. Some define it as the place where a commodity is bought and sold. In that sense, "two women and a goose make a market," and the Chicago Board of Trade is a market. Other economists define a market as the total of the several markets that deal in the same commodity. Still others regard the market as an area or sphere over which price-determining forces work; it may be local, as in the case of bricks, or it may be world-wide, as in the case of wheat or United States government bonds.

It is shown in Appendix A that these definitions do not get at the economics of the matter, and that a more useful definition of a market is: a group of freely competing buyers and sellers, with facilities for trading. The group of buyers and sellers may be concentrated at one point, or at several points, or it may be widely scattered. Prices are determined by the whole group in either case, and will be the same and determined in the same manner in the one case as in the other, provided that the trading facilities are as good in the one case as in the other.

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[10] Ibid., p. 17.

Looked at in this light, the arguments given above as to the effect of direct buying on the price of hogs are seen to miss the point. They assume that Chicago sets the price of hogs. This is not true. Many more hogs are bought in Iowa than in Chicago.[11] It would be more accurate to say that Iowa sets the price of hogs than to say that Chicago sets it. Actually, neither one alone sets it. The price of hogs is set, not by Chicago, but by the whole group of buyers and sellers all over the country, and for that matter, all over the world. In a centralized market it makes no difference to the level of prices whether the bulk of the trading is done on the east side of the pit in the case of wheat (or of the stockyards in the case of livestock) or whether it is done on the west side. And in a decentralized market it makes no difference whether most of the trading is done in the eastern part of the trading territory, or on the west side, or in a little knot in any one part, or all over the territory—provided that the facilities for trading are as good in the decentralized market as in the centralized market.

This may sound like a very nice theory, unconfirmed by any empirical test. Empirical tests have been made, however, by several different economist-statisticians, and they all tell the same story—there is no factual evidence of any depressing effect of direct buying on the price of hogs.[12]

THE DANGER IN DIRECT PACKER BUYING

The danger from direct buying is not that it may substantially lower the price of hogs by undermining Chicago prices or some other assumed basic price. The danger lies in the extent to which the actual situation in hog marketing falls short of the proviso that "a scattered market is as good as a concentrated market, provided that the trading facilities are as good in the one case as in the other."

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[11] About 12 million hogs are produced annually in Iowa, and more than 70 per cent of these are sold direct. Thus more than 8 million hogs are sold direct in Iowa. Receipts of hogs (for sale) at Chicago are only about half this amount—between 4 and 5 million head per year. (*The Direct Marketing of Hogs,* p. 49.)

[12] See *The Direct Marketing of Hogs,* also F. L. Thomsen, "The Direct Marketing Controversy," *Journal of Farm Economics,* Vol. XVII, No. 4, November, 1935, pp. 740–41; D. A. Fitzgerald, *Livestock Under the AAA,* Brookings Institution, Pub. No. 65, 1936, p. 250; Preston Richards, "Livestock Marketing Methods and Livestock Prices," *Journal of Farm Economics,* Vol. XXI, No. 1 (Proceedings Number), February, 1939, pp. 219–27. Similar conclusions have been reached in a study of the situation in Canada. See W. F. Chown, S. C. Hudson, and J. N. Lewis, *The Direct Marketing of Livestock,* Pub. 726, Dept. of Agr., Ottawa, Canada, 1941.

Need for Adequate Market News: It is evident that if the trading facilities are not good, individual sellers (or buyers) may suffer. If some seller who has not put himself in touch with the best bids available accepts $7.50 per 100 pounds for his hogs when he could have received $7.75 somewhere else, he loses 25 cents per 100 pounds. He would do better to pay a commission man to do his selling for him (provided that the price thus obtained was higher than the other by more than the commission and other charges). If market facilities are poor, direct buying may lose the seller more money than the commission charges he avoids by selling direct.

This puts the responsibility squarely upon the packers and the farmers, through their government, to provide first-class market facilities for direct buying, if farmers are to be protected from potential bad effects of the practice. The most important of these market facilities is a stream of current, accurate, and detailed market news as to livestock prices at all available points in the general market for livestock.

Need for Adequate Grading System: A second important need is for a uniform and relatively fine-grained system of grades, and an accurate way of determining where individual hogs or lots of hogs fall in that system of grades. It would do a farmer very little good to hear over the radio that hogs at a certain point were selling at from $6.00 to $8.00 per 100 pounds if he could not tell where his hogs would fall in that price range. The situation improves greatly if the market news is refined and standardized, so that a farmer can hear that "Good" butcher hogs from 200 to 220 pounds are selling for $8.00 to $8.15 per 100 pounds. Even then the farmer may not get full value for high-quality hogs, for that grading system does not specifically include dressing percentage. That is left to the final bargaining between the seller and buyer, with the likelihood that both high and low quality hogs will be sold at prices closer to the average than their true cut-out value.

Need for Knowledge of Packers' Buying Practices: A third important need is a thorough study of packers' competitive practices in the decentralized markets, compared with those in the terminal markets. So little is known about either that all that can be done here is to raise one or two questions. Direct packer buying might lead to geographical division of market territory and thus to lower prices at the farm; this is unlikely in view of the heterogeneous nature of the competition in the area, but more needs to be known about the methods by which interior packers establish their prices from day to day. Direct packer buying might lead to a breakdown of the central market volume-sharing schemes discussed in Chapter 17 of this book and thus result in higher prices at the farm. Or it might intensify the duplication of packer buying and selling services, and thus widen middleman's costs; or it might enable buyers, sellers, and product to get together with less cost than those involved in using the central markets. Only a small beginning has been made with studies of this sort.[13] Much more needs to be done.

Pending the results of such studies, only tentative conclusions can be reached. The judgment as to the good or evil effects of direct buying depends upon how good the market news is, how good the grading system is, and how fully competitive the packers' buying system is. If market news is inaccurate, not detailed, and not available currently, and farmers do not use even what is available, then direct buying of hogs could have adverse effects upon hog prices. If market news and market grades are adequate, direct buying permits farmers to escape some of the costs of selling hogs on terminal markets; it could result in a net gain, divided between farmers and packers. A program of action to deal with the direct packer buying question, therefore, calls for steps to improve market news and market grades to the highest possible accuracy and timeliness, and for the prosecution of extensive research work along the lines indicated above.

The tentative conclusions and recommendations given in the federal government's report on direct buying of hogs are given herewith.

CONCLUSIONS CONCERNING THE EFFECTS OF DIRECT MARKETING[14]

"This study shows that the growth of direct marketing of hogs and of other livestock is due to causes which are closely associated with the economic development of the country and particularly of its livestock industry. It is shown that the sharp decline in the level of hog prices since 1926 was due to the drastic reduction in consumers' income incident to the depression and to the decline in foreign demand for American hog products. . . .

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[13] *The Direct Marketing of Hogs,* Misc. Pub. No. 222, USDA, 1935; Geoffrey Shepherd and Norman V. Strand, *Local Hog Marketing Practices in Iowa,* Iowa Agr. Exp. Sta., Bul. 262, August, 1939; William H. Nicholls "Market-sharing in the Packing Industry," *Journal of Farm Economics,* Vol. XXII, No. 1, February, 1940.

[14] *The Direct Marketing of Hogs,* pp. 21–23.

"Data on price differentials among markets show that no one market, nor any particular type of markets, sets the level of hog prices for all markets. The distribution of the volume of hogs consigned to public markets among the different grade classifications was shown to be approximately the same as of the hogs marketed direct; that is, the public markets on the whole were not receiving more than their proportionate share of low-grade hogs. This, together with the fact that no one market or group of markets sets the price for all markets, leads to the conclusion that the growth of direct marketing has not impaired the price-registering function of the public markets nor caused the prices at the interior markets to be lower than if direct marketing had not increased.

"Moreover, this study shows that the growth of direct marketing has not caused the returns to producers of hogs to be less than they would have been otherwise.

"Although this study shows the growth of direct marketing has not been to the disadvantage of the producer, it also shows that there is need for correction of some practices and the development of additional services to improve the marketing of hogs.

RECOMMENDATIONS

"1. The method of pricing hogs in vogue at certain direct buying points in some areas by means of a 'board' price which is posted and made generally known, together with a variable 'add' to this price, which is not publicly announced, leads to confusion and uncertainty regarding the price situation and may readily be developed into a deceptive or discriminatory practice. This method should be modified or replaced by one that makes generally known to all sellers the range of prices that are being offered and being paid for different grades of hogs.

"2. The practice of 'filling' hogs by feeding before selling should be discontinued at all markets, except such feeding as may be advisable for humanitarian reasons. The practice is wasteful of feed, increases marketing costs, reduces the value of the animals for slaughter, and tends to lower rather than to increase total net returns to producers.

"3. The practice of docking 'piggy' sows and stags to partially offset their undesirable characteristics as slaughter animals is not an equitable method of accomplishing this end, and the practice should be eliminated in all markets. Such animals should be sold and bought on their merits at actual weights, as is now done in the case of cattle and sheep.

"4. Sale facilities and weighing by the buyers of hogs at interior marketing points should be subject to such supervision as will give general confidence that sellers' interests are fully protected.

"The above recommended actions and the correction of any other undesirable practices might be effectuated in part by mutual agreements or common consent among buyers and sellers and/or by such further enlargement of the powers and facilities of the Packers and Stockyards Administration as may be needed to give this agency the necessary authority to accomplish these ends.

"5. It is further recommended that uniform grade standards for trading in hogs be adopted for use at all types of markets. This would facilitate the sale of hogs on the basis of quality and would eliminate the confusion arising from the use of many systems of grading and of grade terms that differ from market to market. Since the adoption of standard grades for hogs and their application (sorting and selling by grades) through voluntary agreement is unlikely, and the grading of hogs by official graders under mandatory requirements would entail considerable addition to marketing costs, an intermediate plan is suggested. Selling and buying on grades would not be compulsory, but whenever trading is done on the basis of grades, federal standards alone should be used under federal supervision, and all price quotations on grades should be in terms of these federal standards. This would require additional legislative authority.

"6. Extension of the Federal Market News Service is suggested. The service now maintained in the Iowa and southern Minnesota direct-marketing area should be strengthened and a similar service is particularly needed in other important direct-marketing areas, especially in the eastern Corn Belt where information regarding supply, demand, and prices paid is at present quite inadequate to make possible for producers to choose the best outlets available. The general adoption of uniform grades would provide a better basis for quoting and reporting prices of hogs."

CHAPTER 13

Negotiated Prices: Milk Price Plans

The prices discussed in the preceding chapters are pretty much open-market prices, determined under conditions approximating those of atomistic competition. The price of one very important farm product, however, is determined under conditions that depart considerably from atomistic competition. That product is milk. Its prices are determined by negotiation between two groups—the producers, and the distributors—each of which has some degree of geographical monopoly.

The reasons for milk being taken out of the open competitive market system are clear enough. The competitive system requires the existence of certain conditions if it is to work well—large numbers of buyers and sellers, no one large enough to affect prices appreciably by his own actions, and each free to deal with any other seller or buyer, and adequate information as to supply, demand, and prices. But these conditions are not met in milk marketing. The producers of milk are large in numbers and small in size, but the distributors are usually small in number and large in size. The economies of large-scale operation in milk distribution are so great that milk distribution soon becomes concentrated in the hands of a few large distributors. The small number of these distributors, coupled with the fact that milk is bulky and perishable, so that a milk producer can usually sell his milk only in the one city market adjacent to him, puts the *distribution* of milk in the monopoly category. And when you get a monopoly (the distributors)[1] dealing with a competitive group (the milk producers) you are likely to get trouble.

The trouble is accentuated in this case by the nature of the commodity itself. Milk is highly perishable; it must reach the market fresh every day in the year. It is so excellent a medium for the growth of disease bacteria that it must meet rigid sanitary standards. It is produced in markedly varying amounts from season to season throughout the year. The demand for fluid milk is more nearly constant throughout the year than the supply, so that any group of producers with enough milk to supply the market in the winter will have more than enough milk to supply the demand in the summer. The demand for fluid milk is so inelastic that this "surplus" milk cannot easily be disposed of, simply by lowering this price. If, as in the traditional competitive market, the price for all the product fell to the level of the marginal uses (in this case butter, ice cream, and cheese), summer production would be so reduced that winter production would be expensive (either because of producers getting out of milk entirely, or producing it in fairly constant amounts throughout the year). Milk prices then would be low in the summer and high in the winter. Consumers would object because the prices of their milk tickets would be continually changing from one month to the next and would average high over the year as a whole.

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[1] In this case operating as a monopsony (a single buyer) or more accurately, as an oligopsony (a few buyers).

As a result of this complicated situation, a system has been worked out by which the surplus of milk in the summer (over fluid milk consumption) is not choked off, nor allowed to pull all milk prices down to butterfat levels, but is segregated and paid for at butterfat levels. The price paid for that part of the milk which is used for fluid milk purposes remains at a constant level throughout the year. Thus arises the phenomenon of two different prices being paid for milk out of the same can—perhaps $2.25 per 100 pounds for the milk that is used for fluid purposes, and $1.25 per 100 pounds for the "surplus."

FOUR MILK PRICE PLANS

These two-price or multiple-price plans for milk have been well described in recent literature. The following paragraphs are adapted from three authoritative sources.[2]

Fundamentally ,there are only a few distinct types of price plans. There are, however, several variations from each plan and combinations of two or more plans. The more common plans are:

1. The flat-price plan.
2. The classification-price plan.
3. The base-surplus plan.
4. The combination of the classification and base-surplus plan.

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[2] W. P. Mortenson, *Economic Conderations in Marketing Fluid Milk,* Agr. Exp. Sta., Res. Bul. 125, Univ. of Wisconsin, 1934; Paul E. Quintus, and T. G. Stitts, *Cooperative Fluid Milk Associations in Iowa,* Farm Credit Admin., Cir. 105, 1937; and E. W. Gaumnitz and O. M. Reed, *Some Problems Involved in Establishing Milk Prices,* AAA Market Information Series, DM-2, 1937.

1. *The flat-price plan* is common in the small cities and villages. A dealer pays all farmers the same price—a flat price—for all milk received, regardless of how much milk is turned to different uses by the dealer and regardless of the variation in seasonal production.

2. *The classification-price plan* is one in which the dealer pays for milk according to the use he makes of it. It was first used on a major scale in Boston, Philadelphia, and Washington about 1918. Under this plan, a relatively high price is paid for the amount a dealer sells as fluid milk; but for the milk sold as cream a lower price is paid, and for that which is manufactured into butter, cheese, or evaporated milk, a still lower price is paid. The prices for these various classes are then averaged so that the same price is paid to all farmer-shippers, selling to one dealer, for the milk of a given test and grade.

Every dealer, of course, pays the same price for milk going to a particular use, such as fluid milk, but different dealers sell different proportions of milk for the various uses. One dealer may sell 75 per cent of his total milk receipts for fluid uses; another may sell only 50 per cent for this use. Thus, the one dealer will not pay the same average, or composite, price to his patrons as will the other.

In order that all dealers do pay the same average, or composite price, some producers' associations have formed market pools. Under this arrangement, every dealer turns his total payments over to the pool instead of paying his shippers direct, and the pool in turn pays the producers. Thus, every producer receives the same average or composite price for his milk regardless of the dealer to whom he sells. In some other markets, an adjustment is made whereby distributors who have a small proportion of surplus pay an amount to the market pool, and those with a large proportion receive an amount from the pool, so that, while every distributor pays his producers direct, all producers receive the same average price.

3. *The base-surplus plan,* as first used in many markets, was designed primarily to encourage farmers to produce milk uniformly throughout the year. This feature of the plan has not been materially changed, and the usual method is to pay each individual farmer a relatively high price for an amount of milk each month, which is equal to his average monthly production during the previous fall months. The amount is called his base. For all milk in excess of this basic amount (surplus milk) the farmer is paid a lower price. Many variations exist, but the fundamental feature of discouraging high

summer production relative to the winter production by paying each farmer according to the seasonality of his volume is common to all.

Confusion often arises over the use of "base-surplus plan," because the term "surplus" is sometimes used with reference to the amount of milk produced by the farmer over and above his basic quantity, and at other times "surplus" applies to the milk used by the dealer for cream and manufactured products. This might be clarified by using two terms: farmer's surplus and market surplus. There is also a dual meaning for "base." The word is sometimes used to describe the basic amount of production of an individual farmer and in other cases to describe the amount of milk used in the market for fluid purposes. This might also be clarified by the use of two terms; farmer's base and market base.

4. *The combination-price plan* is in reality a combination of the classification plan and the base-surplus plan. In most places in the Middle West, where the base-surplus plan is in effect, it is used in this combination. According to the combination plan the dealers pay for milk strictly according to the uses made of it, just as they do under the classification plan. The distribution of the money to the farmers, however, is made in the same way as under the base-surplus plan. In short, the classification feature of the combination plan applies to the dealers; the base-surplus feature applies to the farmers. In other words, the actual amount of money a dealer pays per 100 pounds of milk depends entirely upon what proportions of his milk receipts are sold as fluid milk, as cream, and as manufactured dairy products. The individual farmer's average price, as compared with that of his neighbors who sell to the same dealer, depends upon how uniformly he maintains his production from month to month.

Table 16 shows the relationship between the prices paid by the dealer for milk going to different uses, and indicates the methods used in arriving at the average or composite price paid to a farmer. It applies to either the combination of the base-surplus and the classification plans or to the classification plan alone.

EXPLANATION OF THE TABLE

Amounts: (Column 2) The number of pounds out of each 100 pounds of milk delivered by any farmer, falling into each classification, is determined by the proportion of the total milk received

TABLE 16

METHOD OF COMPUTING THE PRICE PAID TO FARMERS FOR MILK
(Hypothetical Data)

(1) Uses Made of Milk as Sold by Dealer	(2) Number of Pounds of Milk (Out of Every 100 Pounds Received) Sold by Dealer for Each Use and Price Paid for Each Amount	(3) Amount of Money Received by Farmer per 100 Pounds for Each Class of Milk Sold to Dealer
1. Milk sold for fluid use to regular trade. (Includes all bottled and bulk milk sold to wholesale and retail trade.)	50 pounds at $2.00 per cwt.	$1.00
2. Milk sold as fluid milk to families on relief.	5 pounds at $1.60 per cwt.	.08
3. Milk sold as fluid cream.	20 pounds at $1.30 per cwt.	.26
4. Milk manufactured into butter, cheese, evaporated milk, etc.	25 pounds at $1.00 per cwt.	.25
		$1.59*

* This $1.59 is known as the average, or composite, price received by the farmer.

by the dealer which he sells in such classifications. For instance, if a dealer sells half of his total milk receipts as fluid milk to the wholesale and retail trade, then 50 pounds out of each 100 pounds of milk delivered by any given farmer—assuming he stays within his tolerance—will be paid for at the fluid milk price ($2.00 per 100 pounds in the illustration above). In many markets only about one-half of the total milk reaching the market is sold in this form. Often about 5 per cent is sold to families on relief. Another 15 to 25 per cent is sold to be used as cream and the balance is used for manufacturing.

Prices: (Column 3) The price paid by the dealers for the amount of milk falling into each classification is usually determined as follows: (1) The fluid milk price for regular trade is a bargained price, agreed upon by the local milk producers' association and the dealers in joint conference. These bargaining conferences are usually held once a month. The directors or other officers of the producers' association and representatives of the various dealers at each conference agree upon a price to be paid the current or following month. (2) The relief milk price is commonly arrived at in the same manner, but is usually from 25 to 50 cents per 100 pounds below the regular bargained price. (3) The price for milk used for cream is usually determined by a formula agreed upon by the producers and dealers. The price in this formula is generally based on the current price of butter at some important market, such as New York, plus a substantial differential. (4) The price to be paid for that portion of the milk to be turned to manufactured uses is usually based upon the current market price of butter or other manufactured products with little or no differential above that price.

The Basic Quantity and Price: The average or composite price, as calculated above, is identical for every producer selling to the same dealer where the classification price plan is used alone. Where the classification plan is combined with the base-surplus plan, however, the prices as indicated above are the ones actually received by each individual shipper only when his production stays within a certain limit of uniformity, from month to month, throughout the year. The amount of milk which a producer ships during the fall months establishes what is known as his "basic" quantity upon which his individual surplus will be determined. Specifically, suppose a producer shipped the following amounts of milk: August—4,620 pounds; September—4,600 pounds; October—5,130 pounds, and November—5,650 pounds. Adding these amounts and dividing by four it is found than on an average, this shipper produced 5,000 pounds of milk per month during this so-called base period. This 5,000 pounds become his base for the following eight months beginning December 1. In some markets this base is used for a period of twelve months instead of eight.

According to an agreement entered into between the producers' association and the distributors, the individual producers may be allowed during the following eight months a certain "tolerance." This tolerance is the amount by which a producer is permitted to exceed his basic quantity in any month and still receive the basic price. If the producer exceeds his tolerance, he will receive only the manufactured price for the excess. This tolerance may run as high as 50 per cent of the amount established during the base period. Thus, the above producer would receive the average price for all milk shipped during any of the eight months following, up to 7,500 pounds. If he shipped an amount greater than this he would receive only the manufactured price for the excess. For example, if this producer shipped 7,800 pounds of milk during the month of June he would receive the average price for 7,500 pounds and the manufactured price for 300 pounds. In some markets, if the total amount of basic milk of all farmers plus any tolerance allowed is not sufficient to provide the market needs of fluid milk and cream, the additional amount needed will be obtained from the farmers' surplus. This will raise the surplus price paid to farmers to a level somewhat above that of milk used for manufactured purposes.

Usually, however, the situation is the opposite of this; the total amount of the basic milk of all the producers—the total "farmer's base"—exceeds the total fluid needs of the market—the "market base." On this account, producers in some markets are allowed the basic price for only 90 per cent of their basic quantity.

The total "farmer's base" is likely to exceed the total "market base" because the basic price is set high enough above the everyday butterfat equivalent price to cover the extra cost of meeting the fluid milk sanitation requirements and still make it worth the farmer's while to belong to the association. This higher price attracts other farmers' attention, and they apply for membership in the association. The officers of the association then have a difficult question to decide. If they let the new applicants join the association, and give them a basic quantity, this amount added to the previous total "farmer's base" will make the new total "farmer's base" exceed the "market base." If they meet this situation by making, let us say, a 10 per cent cut in the existing farmer's bases, they will hear from those farmers; or if instead they reduce the basic price, because they cannot sell all the basic milk at the fluid milk price, they will also have trouble. So they may be tempted to refuse to let the new applicants into the association. But if they do that, the applicants may set up a new association or start in as individual producer-distributors, in either case taking some of the market away from the original association.

To meet these difficulties, milk cooperative administrators have adopted policies ranging all the way from an "open base" at one extreme to a "closed base" at the other. Under the "open base" policy, each producer earns an entirely new base each year, unrelated to the base he held in former years. Under the "closed base" policy the same base assignments may remain in effect with only minor adjustments, for 10 or 15 years at a stretch. Under policies between these two extremes, bases may be held for two or three years at a time.

About half of the milk cooperatives investigated in a recent study were following an "open base" policy; a quarter had a "closed base" policy, and the rest used an intermediate policy. In practically all cases, there was a probationary period of from one to six months for new producers joining the cooperative, during which period they received only surplus prices for all of their milk. After this period is over, they are assigned a base or quota calculated as some percentage of their average deliveries during the probationary period. This arrangement acts as a sort of elastic barrier to new applicants for membership.

THE ELEMENT OF MONOPOLY

The milk price plans described above involve some element of monopoly on the part of milk producers. That is evident merely from the fact that two different prices are charged for the same product. How important is this element of monopoly?

Cassels, in a careful investigation of this question,[3] concluded that the prices paid for fluid milk in 10 of the largest milk markets in 1925-29 ranged from 36 cents (in Minneapolis) to $1.31 (in Hartford) per 100 pounds higher than the computed competitive prices for milk of manufacturing quality. He was not able to determine accurately how much of these premiums was due to the higher costs involved in meeting the high sanitary standards enforced for fluid milk, and how much was due to the bargaining (monopoly) power of the producers' fluid milk organizations and the policies of local protection adopted by state and municipal authorities. But he estimated that a premium of 20 to 30 cents per 100 pounds would be easily sufficient to induce producers to maintain the sanitary and quality standards required in the fluid milk markets, and that anything more than that should be attributed to the monopolistic position of the producers in the near-by area.

Milk producers have evidently chosen between (1) breaking down the monopoly position of the milk distributors, and (2) building up their own (the producers) monopoly power to equal that of the distributors, in favor of the latter course. Perhaps the second alternative was chosen only because the first could not be carried through. Whatever the reason, the fact is that two monopolies grow now where only one grew before. How does that sit with the consumer, who pays the bill for both?

Consumers have made very little united protest against fluid milk prices. Milk producers' cooperatives, milk distributors, and state milk control boards have run their own affairs without consumer representation in their councils, and without paying much attention to any protest that consumers have made. The assumption has been made, and sometimes set forth in so many words, that consumers will take just as much fluid milk at high prices as at low prices.

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[3] John M. Cassels, *A Study of Fluid Milk Prices,* Harvard University Press, 1937, pp. 171–74.

However true this may be over the short term, it is clearly not true over the long term. The spread between the average United States price of a quart of fresh milk and the price of a 14.5 ounce can of evaporated milk widened from 2.9 cents in 1923 to 4.0 cents in 1931 and to 5.5 cents in 1939.[4] Meanwhile, the consumption of fresh fluid milk and cream declined slightly, from 352.7 pounds per capita in 1924 to 343.1 in 1940, while the consumption of evaporated and condensed milk rose from 11.8 pounds to 19.2, an increase of 63 per cent.[5] A sample survey conducted by Mortenson[6] showed that the consumption of evaporated milk was greatest among low-income families, that they used it as a replacement of the more expensive fresh milk, and that their chief reason for doing so was the relatively high price of fresh milk.

SETTING THE PRICE OF MILK

The price of milk is set, as shown above, by a process of pull and haul between two monoplistic groups, or, in more technical language, between a monopolistic group and a monopsonistic group—the organized producers and the organized distributors. This is a rough and tumble process, especially in the larger cities; a good deal of milk has been spilled, and some blood shed; both the federal and state governments have had to intervene.

Under the original Agricultural Adjustment Act of May, 1933, minimum price floors were established in several milksheds, both for the prices paid by distributors to farmers, and for the prices paid by consumers to distributors. By December, 1933, the attempts to fix prices to consumers had broken down because of enforcement difficulties, but the procedure for establishing the minimum prices paid to farmers was maintained, and is still in force in 26 or more markets. Sixteen states also have laws for establishing minimum milk prices, in some cases including minimum prices to consumers as well as to the farmers. The constitutionality of the state laws has been upheld in several states, and federal control of milk prices was declared constitutional by the Supreme Court of the United States on June 5, 1939, when it upheld the validity of the orders regulating the handling of milk in the New York and Boston markets.

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[4] Retail Price Bulletins, Bureau of Labor Statistics (Monthly). The data cover 51 cities.

[5] *Agricultural Statistics*, USDA, 1944, p. 356.

[6] W. P. Mortenson, *Milk Distribution as a Public Utility*, Univ. of Chicago Press, 1940. Appendix C.

SETTING MILK PRICES TO FARMERS

The process of setting minimum prices to be paid to farmers for milk is therefore pretty well regularized in most large cities today. Under the Agricultural Marketing Agreement Act of 1937, whenever there is dissatisfaction with the price of milk, the Secretary of Agriculture is authorized to call a hearing, at which all interested parties may present their evidence. After the hearing, the testimony is considered by the milk price officials of the Department of Agriculture, and the provisions that are approved are incorporated in a proposed order. This proposed order then goes back to the producers and handlers for their vote. If at least two-thirds of the producers and half of the handlers vote for the order, it goes into effect and is binding upon all producers and handlers in the milk shed. It may also go into effect, even if the handlers vote against it, provided that at least two-thirds of the producers have voted for it and the president of the United States has approved it. Subsequent amendments to the order go through a similar hearing and voting procedure before adoption.

The chief shortcoming of this official procedure is its cumbrousness and inflexibility. So much time elapses after a change in prices is initiated, before it can be put into effect, that the prices are always behind the times.

In an effort to overcome this shortcoming, a system of flexible prices has been advocated. A system of this sort has been in effect in the Chicago market since November 1, 1935, and was incorporated in the federal order of September 1, 1939. It was also included in the federal order for St. Louis, in December, 1940. "Essentially, the flexible plan consists of tying the price of market milk to the price of butter. In some places this is accomplished through use of the price of condensery milk, which is based largely on the prices of butter and cheese. The condensery price is used for the reason that it not only reflects changes in the general price level, cyclical price movements, and seasonal variations in price, but includes the value of skim milk and transportation. At other places market milk prices are based directly on butter prices. To provide for the extra cost of producing market milk, the prices are of course higher than those for condensery milk or for milk used for manufacturing butter. In addition, premiums above the butter or condensery price are established to reflect local and unusual conditions. In this way sanitary conditions, even production, and such abnormal conditions as a short local supply occasioned by drouth, can be taken into account...

"Under this plan the price of Class I milk to dealers (f.o.b. the country plant) is 70 cents over the federal formula price for condensery milk for the months of July to November, 55 cents over the condensery price December to April, and 45 cents in May and June. For Class II milk the premiums are 32 cents during July to November, 25 December to April, and 20 in May and June...

"The price for Class III milk made into butter is the butter price plus 20 per cent; for that made into evaporated or condensed milk, dealers pay the average price paid by 18 condenseries located in the Chicago milkshed...

"The condensery price, upon which so much of the Chicago flexible price plan rests, in turn rests upon a formula from which, under the federal evaporated milk code (first used in September 1933), the minimum monthly prices to be paid producers for condensery milk in the east north central states are derived. This formula is:

$$\frac{\overset{\text{Chicago 92 score}}{\text{butter price}} \times 6 + 2.4 \times \overset{\text{Wisconsin twins}}{\text{cheese price}}}{7} \times 3.5 + 30\%$$

"Under this formula six-sevenths of the condensery price is based upon butter prices, the other one-seventh upon cheese prices. In 1938, 44 per cent of the total milk supply in the United States was made into butter and 7 per cent into cheese. Hence these proportional weightings appear to be reasonable.

"Since condensery prices to producers are based upon milk with a butterfat content of 3.5 per cent, the combined butter and cheese price is multiplied by 3.5. The 30 per cent added to this price represents the skim milk value plus extra costs for transporting whole milk. Costs for hauling cream efficiently usually are around two cents per pound of butterfat, and the usual costs for hauling condensery milk average from four to five cents per pound of butterfat."[7]

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[7] R. W. Bartlett, *The Price of Milk*, The Interstate Printers and Publishers, Danville, Ill., 1941, pp. 58–62.

There are several reasons for basing the prices for the different classes of market milk on the price of butter: (1) This price is determined under free competitive conditions over the nation as a whole. (2) The price of butter quickly and closely reflects changes in consumers' incomes. (3) The prices paid for "surplus" milk must be kept in line with butter prices, since about three-fourths of it is made into butter, the rest going into evaporated milk, cheese, and other products that compete with butter for milk. The same thing is true in the long run for the prices of Class I and II milk; they must be kept in line with butter prices, otherwise too much or too little milk will be used for fluid purposes, and a surplus or scarcity of Class I and II milk will eventually develop.

The use of this flexible price plan retains the benefits of the orderly and public determination of milk prices, since it does not fix the actual prices for market milk but only their relation to butter prices. If these relations are set too high the resulting increase in milk production (provided no barriers are placed to hinder this increase) before long forces a reduction in the relations; if they are set too low, the resulting shortage has the opposite effect.

SETTING MILK PRICES TO CONSUMERS

The flexible price plan appears to be a satisfactory solution to the problem of setting milk prices to producers. What about the other problem—setting milk prices to consumers?

On the face of it, the flexible price plan would seem to complicate the problem of setting milk prices to consumers. It would seem to call for a never-ending process of changing prices to consumers in line with the continuously changing prices to producers. This is difficult because the prices per quart to consumers either have to be changed in fractions of cents, or else, if they are changed only in whole cents, the distributor's margin is too wide at some times and too narrow at others.

And how is the width of the margin to be set? If the job cannot be done by federal order, as the government found out in 1933, because of the difficulties of enforcement, how can it be done?

Cooperative Milk Distribution: One solution would be to have milk distributed by a cooperative association—either a producers' or consumers' cooperative. In Norway before World War II, most of the milk in each large city was distributed by the Milk Central, the milk producers' cooperative association. The country was divided into eight districts, with one milk central in each district.

Each central had a high degree of autonomy, with the power to fix retail as well as farm prices for milk in its own district. These milk centrals realized that reducing the milk distributors' margin would benefit producers as well as milk consumers. They set up their own retail milk stores to handle their milk at the lowest possible cost. (Most of the milk in Scandinavian countries is sold through stores.) They set the retail price so low that private retailers claimed that they could not cover their costs. The cooperative stores found they could by handling large quantities of milk at low prices. Within a few years the cooperative stores had most of the distributing business.

The cooperative stores kept their distributive margins low, passing the benefits to the consumer as well as to the producer. This is shown by a comparison of the prices paid for milk by consumers and the prices received by farmers in 1935 at Oslo (the capital and by all odds the largest city in Norway) with the prices in Copenhagen (the capital and largest city in Denmark) a few hundred miles south across the Skagerrack, where milk was distributed by private dealers. The prices, expressed in ϕre per kilogram, were:[8]

	Oslo	*Copenhagen*
Prices paid by consumers	28	34
Prices paid to farmers	20	14.62

Thus the Norwegian farmer received one-third more for his fluid milk than the Danish farmer, yet the Norwegian consumer paid nearly one-fifth less than the Danish consumer.

The reason why the Danish farmers, who are good cooperators, did not follow the example of their Norwegian brethren may trace back to the fact that Denmark did not have a nationwide Milk Central system. Cooperation in dairying in Denmark is confined mostly to individual cooperative dairies and to butter exporting firms.

In the United States, progress in cooperative milk marketing has been slow. There were about 100 farmers' cooperative associations in 1940, distributing milk as a major activity.[9] About 75 more distributed milk as a side-line activity. Most of these milk-distributing cooperatives were relative small, compared with the major milk dealers in metropolitan markets. They sold 40 million dollars worth of bottled milk and cream in 1939. About 60 per cent of the associations were formed during the two five-year periods from 1919 to 1923, and from 1932 to 1936, when price conditions were rapidly changing.

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[8] These figures were obtained by the author in Oslo in person in 1935.

[9] Louis Herrmann and Wm. C. Welden, *Distribution of Milk by Farmers' Cooperative Associations,* FCA, Cir. C–124, 1941.

Not enough is known about these cooperative milk distributors to provide a basis for estimating whether they are likely to increase or decrease in size and numbers in the future. The capital investment required is an obstacle to their formation, and there appears to be some tendency for age to weaken the older associations.

MILK DISTRIBUTION AS A PUBLIC UTILITY

Another method of setting milk prices to consumers that has been suggested is to make milk distribution a public utility. Mortenson's intensive study of milk distribution costs shows that the average margin taken by distributors (the difference between the price they pay the farmer and the price they charge the consumer for milk) has been about six cents per quart. This margin is high partly because of overlapping delivery routes, high overhead on less-than-fully-used capital equipment, and other wastes resulting from the monopolistic competition inherent in the present system. Mortenson considered what savings could be made through the elimination of these wastes by the setting up of a unified efficiently operated public utility system of milk distribution, and concluded that such a system could lower distribution costs by an amount somewhere between 1.5 and 2.3 cents per quart.[10] This is a substantial reduction. It would benefit milk producers as well as milk consumers, since consumers would take more milk at the lower price than they did formerly. The price of milk to consumers under this system could be changed from time to time, either in whole cents or fractions of cents, in such a way as to hold the profits of the public utility to a reasonable level over a period of years.

There is some question whether unifying the milk distribution system in each city and making it a public utility would actually bring about the savings which are theoretically possible. Some utilities, such as the railroads and others, have a record of inefficiency, inertia, litigation and financial mismanagement that does not augur well for the success of applying public utility regulation to milk. Others, particularly municipal public utilities like those suggested here for milk, have made a better showing, although it is difficult to measure their performance accurately. Any municipal control over a service that involves as much business enterprise as milk distribution is likely itself to be controlled to a considerable extent by those who do the distributing.

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[10] W. P. Mortenson, *Milk Distribution as a Public Utility,* Univ. of Chicago Press, 1940, p. 82.

MAINTENANCE OR RESTORATION OF COMPETITION

Still another way to set retail prices for milk is to remove whatever impediments exist to the sale of milk in stores. When that is done, competition among the distributors for the store outlets should keep the distributors' margins for sale to stores down to competitive levels. If the distributors embark upon collusion rather than competition, the larger stores, or at least the chain stores, are in a position to do something that individual consumers could not do. They can set up their own milk processing plants and systems of delivery to the stores. They have the capital, the volume, the business ability, and the retail equipment to do the job, provided again that any obstacles to their operation are removed.

In this situation, the competition of the store sales of milk would keep the prices of milk delivered to consumers' homes in line with the costs of that service. This competitive pressure between the different methods of distribution would increase the chances that distributors would give consumers of home-delivered milk service at competitive prices, through the institution of such measures as alternate-day deliveries, large containers, etc.

This maintenance or restoration of competition through sales through stores at freely competitive prices has some shortcomings also. The whole problem of setting consumer prices for milk in relation to costs, and reducing those costs, is examined further in Chapter 19.

CHAPTER 14.

Grades, Values, and Prices

If all butter were alike, if all cotton were identical, if all eggs on the market were equally large and fresh, marketing would be a comparatively simple matter. But everyone knows how heterogeneous farm products like these are. Consumers have to pick and choose to get the quality of product they want. Well-to-do consumers will pay well for long staple cotton and fresh eggs and butter, because they prefer these qualities of strength or taste. Consumers with less money to spend will take the less desirable products, but only at a lower price.

When these consumers' preferences, expressed in different prices for different qualities, are reflected clear back to the producer, he is definitely notified what consumers want. Consumers' preferences then evoke the proper producer responses. Producers quickly learn what consumers want when producer and consumer come directly in contact wih each other. But in most modern markets the producer and consumer are far apart, and the problem of reflecting consumer preferences back to the producer becomes difficult.

What is needed is the development of an accurate and intelligible trade language, so that consumers can tell producers what they want by means of words, numbers or other symbols that can be used at a distance, independent of the presence of the physical goods. Then consumers and producers can talk intelligibly to each other even though they are hundreds of miles apart.

This sort of trade language also is an essential prerequisite to an accurate market news service. It is not much help to tell a producer that "hogs" are worth $10 to $12 per 100 pounds at one market, and $10 to $11 at another. He cannot tell where his hogs will fall in those ranges. For that purpose, he needs more detailed market news that will enable him to determine which market is offering the most for his particular lot of hogs. Some means has to be found for describing different grades of hogs in a concise trade language that sellers, reporters, and buyers all understand. When that is done, a producer can learn that one market is paying $10 to $10.25 for 200- to 220-pound butcher hogs, "Good to Choice" grade, while another is paying $10.10 to $10.30. In addition, he can learn whether the markets are paying more, or less, for heavier hogs than his. Then he will know whether to sell his hogs at that time or to carry them to heavier weights.

This detailed specification of different weights and grades of hogs represents a great improvement over a "pigs is pigs" basis of trading. That system practically required the physical presence of the seller, buyer and product in a few large markets, with the congestion and other features that resulted in high marketing costs. The present system of detailed specifications is a considerable step forward.

The present market news, however, still is not completely satisfactory. In the example given above, there still is a range of indeterminacy of 25 cents at one market and 20 cents at the other. The producer may actually get less for his hogs at the market that has the highest price quotation; the buyer there may pay lower within the range than the buyer at the other market. But live hogs, or beef cattle, or sheep are so difficult to appraise in value on the hoof that the present stage of livestock grading and market news reporting may be about as advanced as the characteristics of live animals permit.

GRAIN GRADING PROBLEMS

The need for grading and the advantages of objective grading systems were shown in general terms in Chapter 5. Here it is necessary to go further and trace briefly a specific case—grain grading—where the development of an objective grading system vastly improved marketing conditions for grain. It is not too much to say that it pulled order out of chaos. This account helps to make clear in later sections what needs to be done in the case of other products.

Grain grading is chosen for illustration first, because greater progress has been made with grading for grain than for almost any other product. The chief reason for this is the physical characteristics of grain itself. Grain is durable, easily handled in bulk without deterioration, and easily graded on the basis of objective grade factors such as moisture content, protein content, percentage of damaged kernels, etc. It can therefore be sold on the basis of objective grades and accurate market information in terms of those grades.

It was not always thus. Grain marketing went through chaotic stages in its early history. Developments in transportation permitted buyer and seller to operate at great distances from one another before there was much of a grading system to enable them to talk the same economic language. For a considerable time, each trader tried to develop his own trade language; and a veritable tower of Babel situation resulted.

In the early days, grain was sold by sample or the buyer looked it over personally, when possible. When the buyers could not see the grain beforehand, dealers developed the custom of submitting a sample or of signing a statement as to its general quality and condition.

"This practice of individual dealers issuing their own written statements of grain quality did not prove very satisfactory, however, and in time the matter was taken over by chambers of commerce and boards of trade. These organizations adopted a system of grading and employed inspectors to grade the grain either when arriving at market or at time of shipment. Grain was first graded in the United States in 1857 by inspectors employed by the Chicago Board of Trade.

"As the trade in grain grew and became of paramount importance in the surplus-producing states, the grading and inspection work eventually was taken over by several of the state governments. This was done first in Illinois in 1871. Between 1871 and 1916 nine states established grain-inspection departments.

"The story of grain marketing in those years from the 1880's down to the World War was one of ever-mounting difficulties with grain inspection. Each market had its own grades or methods for interpreting grades, and sometimes the certificate of grade issued in one market was not recognized in another.

"The specifications of the various grades differed in the states and the markets, and often were indefinite. For instance, some standards required that No. 2 corn be dry, others reasonably dry; one would require not more than 16 per cent moisture, another perhaps not more than 15.5 per cent; some one weight per bushel, some another. No. 3 oats alone were described or designated under more than 30 different specifications, and the test-weight-per-bushel requirements for this grade varied from 22 to 29 pounds per bushel. . . .

COMMERCIAL HAZARDS CAUSED BY NONUNIFORM STANDARDS

"Grain of 'contract grade' at one market might be and often was graded differently at another market, thus throwing added difficulties in the way of fulfilling contracts. Durum wheat, graded as such in the state where grown, might be changed even as to name—called macaroni wheat—when it reached a seaport. Wheat destined for export was often given a grade far above its actual quality. Local elevators, and for that matter all kinds of buyers, frequently took advantage of farmers by lowering the grade when buying grain, expecting then to sell it as of a better grade and so add to their profit. Wheat received from country points frequently was given lower grade designations in early fall than the same kind of wheat was later on. This sometimes worked to the disadvantage of a considerable part of the crop that was sold early.

"The upshot was that this loose, confused, unregulated grading system imposed a huge burden of hazards upon the grain trade. Traders strove to protect themselves against these hazards by taking wide margins of profit wherever possible.

"The farmer was penalized by this whole system. The toll taken all along the line from the foreign market way back to the country elevator tended to cut down the farmer's price. It was a common grievance that terminal market prices were not well reflected back at the country shipping points.

COMPLAINTS FROM FOREIGN BUYERS

"The widespread agitation against this chaotic state of things was brought to a head finally by complaints from foreign markets. These complaints began to be formidable about 1898. British and French interests and later on numerous European trade organizations, grain dealers, millers' organizations, and individual importers began to protest over the unreliability of American grain-merchandising practices.

"By 1906 the certificates from certain American markets were absolutely refused abroad and export trade was in serious jeopardy. A series of complaints from European countries was lodged with our State Department. This situation went from bad to worse for some years. The American grain trade itself actively sought means of improving the conditions; attempts were made to establish uniform grades and inspection, but it was found impossible to control the selfish practices of individual dealers and markets.

THE UNITED STATES GRAIN STANDARDS ACT

"This chapter of grain trade history culminated finally in a widespread public demand for federal control of grain inspection. The demand was met by the passage of Congress of the United States

Grain Standards Act, August 11, 1916. This act gave the federal government authority to establish uniform standards which shall apply to all grain sold or shipped by grade in interstate and foreign commerce from or to an inspection point; also to establish a supervisory organization to oversee the application of the standards. . . . When grain is sold and shipped by grade in interstate or foreign commerce to or from a point at which official grain inspection service is maintained, official inspection is required. . . .

"Under this act the part played by the federal government is supervisory. Original inspections (excepting only a very few disputes referred to the Secretary of Agriculture) are made by inspectors employed by states and grain exchanges or by inspectors operating as individuals on a fee basis. But all inspectors must be licensed by the Secretary of Agriculture and licenses may be revoked for cause. Inspectors to obtain licenses must be in an unbiased status; that is, they are prohibited by the law from being in the grain business or in the employ of grain merchandisers or elevator operators. These provisions give the federal government a high degree of control over the entire inspection system.

"For many years before the passage of the Grain Standards Act, the Department of Agriculture had been investigating grain inspection with a view to the possibility of establishing uniform standards for the important grains entering into interstate and foreign commerce. Soon after the act was passed federal standards were established for corn, wheat, and oats. Standards are now in force for wheat, corn, barley, rye, oats, feed oats, mixed feed oats, grain sorghums, flaxseed, and mixed grain."[1]

EVOLUTION OF OBJECTIVE GRADING FOR GRAIN

The principal factors that determine the commercial grade of grain are test weight per bushel, moisture content, damaged kernels, freedom from foreign materials and other grains or other classes of the same grain, and "condition"—that is, whether the grain is cool and sweet or whether it is musty or sour, heating, or hot. In the case of wheat, the protein content is also important. These are the factors of prime importance for commercial trading purposes.

The official specifications for the different grades of wheat cover eight printed pages, for wheat is divided into six classes for purposes of grading, with detailed specifications within each grade. The essential grade requirements for Hard Red Winter Wheat are reproduced in Table 17 as an example.

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[1] *The Service of Federal Grain Standards,* USDA, Misc. Pub. No. 328, 1938, pp. 2–5.

The grading of grain used to be largely subjective. Moisture content, for example, was determined by touch. Inspectors would judge by the feel of the hand whether grain was dry, "tough," or damp. Today the grading is almost completely objective. When federal standards for grain were first put into effect, an objective moisture-tester was developed by means of which the water was distilled from the sample of grain and measured in a graduated container. The method was slow, however, and not always accurate. In recent years, a new moisture tester has been invented which measures the resistance to an electric current as it passes through a sample of grain. This method has now been made official. It takes

TABLE 17

CLASS IV, HARD RED WINTER WHEAT: GRADE REQUIREMENTS FOR (A) DARK HARD WINTER, (B) HARD WINTER, (C) YELLOW HARD WINTER*

Grade No.	Minimum Test Weight per bushel	Maximum Limits of—					
		Damaged Kernels (Wheat and Other Grains)		Foreign Material		Wheats of Other Classes	
		Total	Heat-Damaged	Total	Matter Except Other Grains	Total	Durum and/or Red Durum
	Pounds	*Pctg.*	*Pctg.*	*Pctg.*	*Pctg.*	*Pctg.*	*Pctg.*
1...	60	2	0.1	1	0.5	5	1
2..	58	4	.2	2	1.0	10	2
3..	56	7	.5	3	2.0	10	3
4...	54	10	1.0	5	3.0	10	10
5..	51	15	3.0	7	5.0	10	10
Sample grade . .	Sample grade shall include wheat of the subclass Dark Hard Winter, or Hard Winter, or Yellow Hard Winter, which does not come within the requirements of any of the grades from No. 1 to No. 5, inclusive; or which contains more than 15.5 per cent of moisture, or more than 10 per cent of cracked kernels; or which contains inseparable stones and/or cinders; or which is musty, or sour, or heating, or hot; or which has any commercially objectionable foreign odor except of smut or garlic; or which contains a quantity of smut so great that any one or more of the grade requirements cannot be applied accurately; or which is otherwise of distinctly low quality.						

* Handbook of *Official Grain Standards of the United States*, USDA, AMS, October, 1940, p. 5.

only 30 seconds to determine the moisture content of grain with this tester, whereas the old distilling method required 40 minutes.[2]

Wheat with a high gluten content often commands a substantial premium—sometimes as much as 40 cents a bushel—over wheat of low gluten content, but these premiums have not always been accurately reflected back to the producer. The "washing-out" gluten test used before World War I was inaccurate, and it was not until this test was replaced by the more accurate chemical protein test (this step was recommended by the American Association of Cereal Chemists in 1914) that much progress could be made in reflecting premiums back to the producer.

The protein test was rapidly adopted after the World War, and a protein content scale was added as a supplement to the original federal grades for wheat adopted in 1917. The protein test was too complicated to be performed at the local elevator, but a common method of sale was for the farmer to sell his wheat at the local elevator on the basis of futures prices at the time of delivery. Samples were taken from each load as it came in, and the wheat was "special binned" to maintain its identity. Later on, after the protein test was made at the terminal elevator, the farmer received whatever premium his wheat was shown by the protein test to be worth.[3]

LIVESTOCK AND MEAT GRADING

The job of working out a set of grade specifications for livestock and meats is considerably more complicated than for grain.

Both products pass through the same general marketing machinery: (1) the producers' local or regional farm market (the local elevator in the case of grain, and the local or packer buyer, or commission man, in the case of livestock); (2) the wholesale or processing market (the miller in the case of grain, the packer in case of livestock); and (3) the retail market (the butcher and baker).

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[2] C. W. Kitchen, *National Standards for Farm Products* (mimeo), USDA, 1938.

[3] For a full discussion of this interesting chapter in the development of wheat grading, see Montana Exp. Sta., Bul. Nos. 189, 213, and 226, by E. J. Bell and others.

A simpler method of determining the protein content of wheat flour, by means of an electric eye, has been recently developed in the grain research laboratories of the Agricultural Marketing Service. The method, entirely different from those previously in use, consists of the extraction of protein from the flour and its precipitation in the form of a stable colloidal suspension. The optical density of this suspension is a test of the gluten protein content of the flour and is measured automatically by means of the electric eye (photoelectric cell). The results are in good agreement with those obtained by conventional methods, and for routine work, the procedure saves time, space, chemicals, and costly equipment.—*Marketing Activities,* Vol. 2, No. 6, USDA, 1940, p. 12.

In the case of grain, the same set of specifications is used in the producer's local market and the wholesale or processing market, and by the time the product reaches the retail market it is so transformed (into bread, for example) that no *grain* grades can be applied at all.

In the case of livestock the product appears in three different forms as it passes through the marketing machinery. It is a live animal in the producer's local or regional market, and the grades must be live animal grades; it is a carcass or a large wholesale cut in the wholesale or processing market, and the grades must be carcass or wholesale cut grades; and it is a small cut of meat—a steak, a roast, etc.—in the retail meat market, calling for grades adapted to that product in that market.

The problem of livestock and meat grading, then, is really three problems, each complicated enough by the nature of the product, but all complicated further by the problem of correlating the three sets of specifications for the three products—the live animal, the carcass, and the retail cut.

GRADES FOR BEEF CATTLE AND BEEF

The history of beef cattle grading is similar in main outline to the history of grain grading. Grade names at first were vague general terms like "Native," "Good Native," "Western," "Fed Western," "Improved," "Texan," etc.—generally based more on the locality where the livestock was produced than on the characteristics of the product from the standpoint of the consumer. Furthermore, the terms meant different things in different localities. "Natives" meant one thing in one market and another thing in another. In the dressed meat trade each slaughterer had, and to a considerable extent still has, his own system of grades. Beef that would be called "Good Native" by one wholesaler might be called "Fed Western" by another.

In 1917, the Department of Agriculture set up a standard uniform classification for livestock and meats, and used it in reporting prices, demand, and supply when the livestock market news reports were inaugurated in 1918. Both the original grades and the revisions made since were based on extended consultation and research. These grades pay no attention to the breed nor to the locality where the animal was produced. They are the basis for the livestock market reports, but they are not universally used as the basis for trading. In most cases, each of the different packers and dealers still retains his own private system of grades, different from the system used by his competitors.

BEEF GRADING

The grading of beef *carcasses* has been carried a step further than the grading of beef *cattle*. In 1923 the federal government began the official grading of beef, not merely for market reporting purposes but as the basis for purchases of beef, as a special service to the United States Steamship Lines. Since that time a number of steamship lines, hotels, hospitals, and other institutional buyers of beef in large quantities have come to specify that the beef they buy must have been graded and stamped by an official federal grader.

This system spread to everyday commercial transactions in 1927. A grade-stamping machine was devised with a wheel in the head that imprints the grade in a long ribbon down the carcass. This stamp remains visible in the retail cuts and therefore carries clear through to the consumer. In 1928 this sort of grading and stamping was put on a service basis and made available to anyone who wanted to pay for it. The cost is $2.00 per hour, which amounts to five or six cents per carcass.[4] In July, 1940, government meat graders were at work in 24 important meat centers. During World War II, government carcass grading was made compulsory for all beef slaughtered under federal inspection.

There are seven official grades for beef (carcasses). They are:

U. S. Prime
U. S. Choice
U. S. Good
U. S. Commercial
U. S. Utility
U. S. Cutter
U. S. Canner

These grade names leave much to be desired on the score of clarity. The consumer has to memorize their relative positions, which are not obvious from the names themselves, as they would be if the grades were numbered No. 1, No. 2, etc. The grade specifications are still subjective, like the early grades for grain. it is difficult to work out objective specifications for beef grades.

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[4] *U. S. Graded and Stamped Meat,* Leaflet No. 122, USDA, 1936.

The number of pounds of beef graded annually since 1927 is shown in Table 18. The breakdown of the figures, and the data for other meats, are shown for 1930 and for the last two pre-war years in the lower part of the table.

TABLE 18

Beef Graded by the Bureau of Agricultural Economics*

	Pounds
1927	17,789,213
1928	41,233,544
1929	48,051,642
1930	68,749,576
1931	159,432,674
1932	207,527,234
1933	237,593,692
1934	261,798,429
1935	267,775,152
1936	450,127,284
1937	408,352,544
1938	602,809,163
1939	512,016,902

Classification	1930†	1938†	1939†
Fresh and frozen:	*Pounds*	*Pounds*	*Pounds*
Beef	68,749,576	602,809,163	512,016,902
Veal and calf	1,442,573	6,180,318	5,684,117
Lamb and mutton	2,469,591	28,015,418	24,213,777
Pork	1,816,067	3,864,145	8,054,168
Cured:			
Beef	790,514	2,754,226	2,279,048
Pork	2,871,936	30,383,026	36,965,666
Sausage	553,481	40,957,099	42,737,079
Other meats and lard	893,683	2,871,084	3,183,944
Total	79,587,421	717,834,479	635,134,701

* Letter from C. V. Whalin, Livestock, Meats, and Wool Division, Agricultural Marketing Service, USDA.

† *Livestock, Meats, and Wool Market Statistics and Related Data, 1939*, USDA, 1940. p. 103.

GRADES FOR HOGS AND HOG PRODUCTS

The problems involved in grading hogs and hog products have also been receiving attention.

The bulk of the hogs sold for slaughter are young stock less than a year old; they are called "butcher hogs." These hogs appear rather uniform in conformation and finish, and most of them fall into the broad grade classification "Good to Choice." The general impression exists that these "Good to Choice" butcher hogs, comprising perhaps 80 per cent of the receipts, are rather uniform in value. The market price quotations merely classify them by weight, the price range for each weight being rather narrow—from 5 to 30 cents per 100 pounds at the interior markets (see the sample in Table 19 below) and somewhat wider than this at the terminal markets.

TABLE 19

PACKING POINT HOG QUOTATIONS (Dollars)

(*Taken from the Des Moines Register, Wednesday, January 7, 1941*)

	Mason City	Waterloo	Cedar Rapids	Ottumwa	Austin	Des Moines
Good butchers:						
140–150 lbs.	5.70	....	5.80–5 90	5.95–6.15	5.10–5.40	5.90–6 00
150–160 lbs.	5.95	....	6.20–6 30	5.95–6.15	5.55–5.85	6.20–6.30
160–170 lbs.	6.20	6.35–6.50	6 50–6.60	6.55–6.75	5 85–6.13	6.45–6.55
170–180 lbs.	6.70	6 75–6.90	6 80–6 90	6.55–6.75	6.15–6.45	6.80–6.90
180–200 lbs.	7.20	7.05–7.20	7 05–7.15	6.95–7.15	6 60–6 90	7.10–7.20
200–240 lbs.	7.20	7.05–7.20	7.05–7.15	6.95–7.15	6.80–7.10	7 05–7.15
240–270 lbs.	7.10	6.95–7.10	6 95–7.05	6.80–7 00	6.80–7.10	6 90–7.00
270–300 lbs.	7.00	6.85–7.00	6 85–6 95	6 65–6.85	6.70–7.00	6.75–6 85
300–330 lbs.	6.85	6 75–6.90	6.75–6.85	6 50–6.70	6.55–6 85	6.65–6.75
330–360 lbs.	6.70	6.65–6.80	6.65–6 75	6.35–6.55	6.40–6.70	6.50–6.60
Good packing sows:						
270–330 lbs.	6.20	6.05–6 20	5.95–6.05	5 90–6 10	5 90–6.20	6.10–6 20
330–360 lbs.	6 20	6.05–6.20	5 85–5 95	5.80–6.00	5.80–6.10	6 00–6.10
360–400 lbs.	6.10	5.95–6 10	5.75–5.85	. ....	5.70–6.00	5 90–6.00
400–450 lbs.	6 00	5.85–6.00	5.65–5 75	5 70–5.90	5 60–5 90	5 80–5.90
450–500 lbs.	5.70	5.75–5.90	5.55–5.65	5.60–5.80	5.50–5.80	5.60–5.70

(*Taken from the Des Moines Register, Thursday, January 10, 1946*) *
Based principally on truck-hauled hogs

	Mason City	Waterloo	Cedar Rapids	Ottumwa	Austin	Des Moines
Good butchers:						
160–170 lbs.	13.25	13.20	13.35	12.95–13.15	13 60	13.40–13.50†
170–180 lbs.	13.60	13.45	13.35	12.95–13.15	13 75	
180–200 lbs.	13.90	13.65	13.80	13.70–13 90	13.90	13.90–14.00†
200–360 lbs.	14.15	13.90	14.05	13 85–14.05	14.15	
Good packing sows:						
270–450 lbs.	13.40	13.15	13 30	13.10–13 30	13.40	13 15–13.25†
450–550 lbs.	13.40	13.15	13 20–13.30	13.10–13.30	13.40	

* These data are unrepresentative, showing the effects of price ceilings and other war time phenomena.

† Des Moines listings are wider—include the bracketed range.

Many producers are coming to believe that hogs are not so uniform in value as the market price quotations imply, and that they are not getting prices for the best hogs commensurate with their actual value relative to the poorer hogs.

The clearest statement about this was made in a recent letter written by R. L. Pemberton, field secretary of the Iowa Swine Producers' Association, to Dean H. H. Kildee of Iowa State College. Mr. Pemberton wrote:

"Day after day, while talking to producers concerning the desirability of a shorter leg, more loin and ham and a meat-type hog, I repeatedly get the answer 'Why should I raise this type of hog? I cannot get any more money for it.' In other words, the producer feels that, although these animals can be worth considerable more per carcass, he will receive the same price, if finished, regardless of cuts and conformation."

In the interior markets, some buyers are reputed to pay a much wider range of prices than those that are quoted. It used to be generally believed that buyers could detect differences in the value of different lots of hogs rather accurately, and pay prices accordingly. This belief is giving way to some skepticism. Of recent years the inaccuracy of live-hog appraisal has been repeatedly shown. At the International Livestock Exposition each year at Chicago, the six lots of sweepstakes hogs are ranked on the hoof; then they are slaughtered and their cut-out values are computed. The two rankings never agree, nor even come close to agreement. In 1939 the lot that ranked at the top on foot ranked next to the bottom in cut-out value per 100 pounds; it was worth 19 cents per 100 pounds less than the lot with the highest cut-out value.[5] This sort of thing is not exceptional at carcass demonstrations. There is usually very little correlation between the rankings on foot and the cut-out values.

The fundamental difficulty is twofold: (1) hogs do differ considerably in value, and (2) these differences cannot be detected accurately on the hoof. The question has therefore been raised whether the basis of sale for hogs could be shifted from the live animal to the carcass, where much greater accuracy in appraisal is possible.

The carcass basis of sale has been used almost universally for many years in Denmark, and more recently (since 1934) it has come into use in Canada. The use of the method there first spread on a voluntary basis. Just before war began in 1939, half the commercial slaughter in Canada was handled on that basis; by September, 1940, the proportion had risen to two-thirds. Since that time the use of government carcass grades, with the grading performed by government graders in the packing plant, has been made official (i.e. compulsory) as the basis for all commercial hog sales.

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[5] For other illustrations *see* Geoffrey Shepherd, Fred Beard, and Arval Erickson, *Could Hogs Be Sold by Carcass Weight and Grade in the United States?* Iowa Agr. Exp. Sta., Res. Bul. 270, 1940.

For the most recent set of specifications for live hog grades (though still phrased in subjective terms) *see:* Don J. Slater, *Market Classes and Grades of Swine,* USDA, Cir. No. 569, September, 1940.

In most cases, the carcass weights recorded by an automatic electrical recording scale on the rail in the packing plant are used as the basis of settlement along with the carcass grades. But this is not compulsory; live weights may be used if desired.

The various physical problems involved have been solved under Canadian commercial conditions. They are:

(1) *Positive identification of the carcasses.* This has been obtained by tattooing the live hogs on the shoulder with a high speed rotary head aluminum tattooing iron and indelible ink.

(2) *Accurate carcass weights.* These are registered by automatic electric recording scales on the carcass rail in the plant.

(3) *Accurate and impartial grading.* This is performed by a government carcass grader stationed beside the carcass rail where it leaves the slaughtering floor.

(4) *Impartial and speedy settlement.* This is secured by the government grader or his assistants filling out the settlement sheets for each farmer, the plant office getting the checks in the mail the day the hogs are slaughtered.

(5) *Low cost.* The extra cost of selling hogs on the carcass basis is estimated by Canadian authorities to be about 1 cent per 100 pounds live weight.

There is considerable evidence that the methods worked out by the Canadians to handle their physical problems could be adapted to conditions in the United States.

ECONOMIC PROBLEMS

Certain economic problems, however, still await solution before the carcass method would work smoothly in the United States. One of them is the problem of working out adequate carcass grade specifications for United States conditions. Objective grade specifications —that is, specifications that run in terms of inches, pounds, etc., rather than in such subjective words as "long," "plump," etc.—have been used successfully in Denmark, Great Britain, and Canada. Their use promotes uniformity and efficiency in grading, gives farmers definite marks at which to aim, and reduces disputes over grading.

The problem of determining proper price differentials for the different grades waits upon the setting up of the grade specifications. This problem is not peculiar to the carcass basis of sale. It exists under the present live weight system but is partly obscured in the crudity of that system.

As far as can be determined, packers would pay out about the same amount of money for a given year's supply of hogs under the carcass system of sale as they would under the present live weight system. If the carcass system were adopted, the benefits to hog producers would come not from any increase in the total amount of money for a given run of hogs but from three other sources:

(1) The money paid for the hogs would be distributed more equitably among the different hog producers than at present. Each producer would get more nearly what his particular hogs were worth. The producer of high-yielding and high-grade hogs would get more than under the present live weight system, and the producer of low-yielding and low-grade hogs would get less.

(2) Under the stimulus of this incentive for raising high-yielding and high-grade hogs, with the passage of time hog producers would bring in hogs of higher average grade and yield than under the present system. A year's run of these higher grade hogs would be worth more to packers, and would enable them to pay more money to hog producers.

(3) The carcass basis of sale would remove any incentive for "filling" hogs, and hog producers would save the cost of the feed now wasted on this practice.

Shifting the basis of sale from the live hog to the carcass and putting the carcass grading in government hands would involve the minimum disturbances of existing livestock trade practices. It would simply mean moving the scales inside the plant and putting a government grader beside them. This would (1) protect farmers and others dealing with more experienced hog buyers, (2) remove the need for "higgling and bargaining" over the yield and grade of the carcass, and (3) provide a uniform language for price quotations. By thus providing a clear, uniform, and accurate language for buyers and sellers it would raise the plane of competition for hogs.

One of the large independent packers, Hormel, located at Austin, Minnesota, put the carcass-buying system into actual practice in 1940. He offered producers their choice of selling their hogs to him either on the traditional live weight basis, or on the basis of their carcass weights and grades. The number of producers who chose to sell on the new basis was small at first, but the experience gained in the operation of the plan in commercial practice will open the way for large-scale adoption if producers desire it.

EGG GRADES

Another farm product that suffers from lack of grading is eggs. Eggs differ greatly in grade and size, and therefore in value to the consumer. These differences in value are well shown in Figure 36, which is based on the prices paid for different grades of eggs in the New York wholesale egg market, 1935–39.[6]

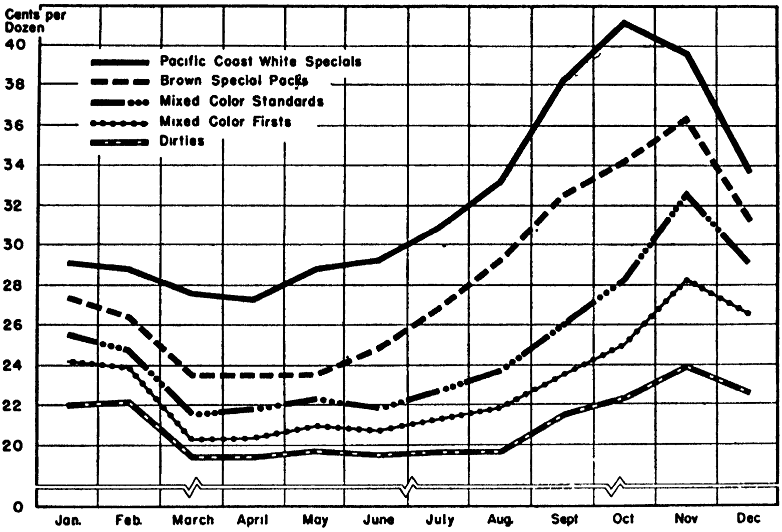

FIG. 36.—Average weekly prices of eggs by grades, New York wholesale egg market, 1935–39. (Iowa State College chart).

In most *country* markets for eggs in the Middle West, however, the majority of the eggs are sold by farmers on a case-run basis without regard to quality. "Country stores or retailers purchase 65 to 85 per cent of Iowa eggs . . . only a few merchants grade eggs . . . In many instances, stores do not thoroughly candle eggs to remove inedible ones because of the large amounts of eggs received on trading days each week, and usually inadequate facilities provided to handle eggs in large quantities."[7] Consumers' preferences for high grade eggs are not reflected back to the producer.

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[6] A. D. Oderkirk, *Selling Iowa Eggs by Grade,* Iowa State College, Ext. Cir. 237 (Revised December, 1940).

[7] *Ibid* (First Edition, 1937).

In most cases eggs are sold all at the same price, in many cases without candling to permit removal of inedible eggs. A flat (average) price underpays the producer of the better-than-average-quality eggs, and overpays the producer of poor quality eggs. There is no incentive to produce high quality eggs, and no penalty for producing low quality eggs.

In addition, the egg grades and standards used in wholesale and retail markets in the United States are not uniform over the country. The egg laws and regulations in 35 states provide for one to four retail egg grades. The use of these egg grades is mostly voluntary, although in eight states labeling according to four grades is mandatory for all eggs sold at retail. In seven states eggs which are labeled must conform to the quantity standards designated. Between and below these requirements various permissive and required provisions govern the marketing of eggs. Labeling requirements appear to have two conflicting purposes—the protection of buyers and the provision of local trade advantages.[8]

STANDARDS AND GRADE SPECIFICATIONS

The standards for individual eggs, the grade specifications based on quality factors and weight classes, vary more in minor details than in principle. Yet these differences disrupt trading, confuse producers, handlers, and consumers, and for the most part destroy the work done over many years of many agencies and thousands of persons to bring more order into egg marketing.

In establishing their grades, 31 states use all or a part of the United States Standards for Quality for Individual Shell Eggs. Seventeen states use the tentative U. S. Standards for Shell Eggs adopted in 1925 in all or a part of their grade descriptions, but they have not changed in accordance with the improvements in U. S. Standards that have come about since 1925. Nine states use the U. S. Standards for Individual Shell Eggs (adopted in 1933) and only eight states use entirely the U. S. Standards for Individual Shell Eggs that were issued in January 1943. In five states local terms are used in describing official grades, or the standards in use have not been specified.

Sixteen states emphasize the term "Fresh" as an indication of quality. The trouble is that the administration of egg laws in these states does not reflect a uniform interpretation of the meaning of this term, which is also used defensively against eggs that may have been in storage. In 12 states, eggs labeled as "Fresh" must correspond to Grade A standards of quality and in three others they may conform to Grade B quality. In another state, Grade C eggs may be called "Fresh."

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[8] See 'Egg Terms Are Confused," *Marketing Activities,* USDA, Processed, September, 1945.

Even though oil processing is recognized as an effective means of preserving the stability of physical qualities in shell eggs, 12 states require "Preserved" or "Processed" eggs to be labeled as such at wholesale or retail—the implication being that the public needs protection against eggs so treated. The egg laws of 17 states require eggs that have been in storage for varying periods to be labeled "Storage," a term which may reflect on the quality of such eggs.

In point of fact, since production is seasonal and eggs are perishable, storage and the oil treatment are desirable service processes which are advantageous to producers, handlers, and consumers alike. Such eggs when properly stored are frequently of better quality than that of many lots of so-called fresh eggs available in retail stores during summer, fall, and even winter. Many factors and conditions contribute to the deterioration of quality—temperature, for example, is more important than the age or time in storage. Both "Fresh" and "Storage" are misleading terms, especially when there exist grade specifications and terms which more correctly describe the interior condition and quality of the eggs.

In four states, eggs originating from foreign countries must be marked "Foreign." In five states, eggs produced in another state must be labeled with the name of that state or marked "Shipped." The laws of one state require eggs produced there to be labeled with the state name. In one state, the word "Shipped" must be stamped on each egg that came from outside that state. In another, "State Eggs" or "Foreign Eggs" in two-inch letters must be stamped on all containers of eggs from other states or from foreign countries.

Nearly all the state officials agree that because eggs are semiperishable and the egg business is keenly competitive, there must be a consistent and persistent enforcement procedure if the value of egg-grading work is to be realized. Yet in 16 states, officials readily admitted that no attempt had been made to enforce the egg laws. In nine states, an adequate force of full-time inspectors was employed. One state had four full-time and three part-time inspectors to make several inspections a year of 3,500 retail stores and restaurants. In another state, 20 to 30 inspectors planned to make at least one annual inspection for each 500 inhabitants of each city or community. Three states depended on employees who inspected eggs and other food commodities as well. One of these states had 40 inspectors. In another state, 19 inspectors had the help of 34 licensed egg graders from numerous plants who moved among the markets and reported the condition of eggs at retail.

TOBACCO GRADING AND INSPECTION

In the case of some products, it has been recognized that more is needed than the setting up of grades and standards. In addition, some governmental action is advisable to get these standards applied, and applied where they will do the grower the most good.[9]

Fifteen or 20 years ago, for example, it became evident that something needed to be done to set up standards against which tobacco quality might be measured and recognized. Something needed to be done to apply these standards on behalf of the tobacco growers at the time of sale. Something needed to be done to see that each grower might have the opportunity to know the current market value of tobacco according to grade. And something needed to be done to help growers prepare their tobacco better for market, because poor preparation was costing some of them plenty.

To help solve these problems the Tobacco Inspection Act of 1935 was passed, supplementing the Tobacco Stocks and Standards Act of 1929.

STANDARDIZATION

Today government-developed tobacco standard grades and standard type classifications are the basis of tobacco inspection, market news, stocks reports, crop estimates, commodity loans, training courses, farm demonstration work, and many other government tobacco activities. These standards of type and grade are used by certain tobacco cooperative marketing associations as a basis for receiving, packing, selling, and settling with their members. When shown on warehouse receipts issued under the U. S. Warehouse Act, the types and grades give bankers and others reliable information about the character and value of the tobacco covered by the receipts offered as collateral for loans. They are used also by tobacco experiment stations in evaluating the effect of different fertilization and culture methods. To some extent the Office of Price Administration has used the official tobacco grades as a basis for establishing ceiling prices.

Twenty-six important commercial types of tobacco are produced in the United States. Of these, official standard grades have been established for 12 types. These cover flue-cured tobacco produced in Virginia, North Carolina, South Carolina, Georgia, Florida, and Alabama; fire-cured tobacco produced in Virginia, Kentucky, and Tennessee; burley tobacco produced in Kentucky, Tennessee, Ohio, Indiana, Missouri, Alabama, Virginia, West Virginia, and North Carolina, and dark air-cured tobacco produced in Virginia, Kentucky, Tennessee, and Indiana.

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[9] See "Tobacco Inspection Act," *Marketing Activities*, USDA, Processed, November, 1945.

Considerable work has been done in the development of tentative standard grades for 10 other types of tobacco, including Southern Maryland; Pennsylvania seed-leaf; Ohio filler types; cigar binder and scrap chewing types of Wisconsin and Minnesota; and shade-grown cigar wrapper types of Connecticut, Massachusetts, Georgia, and Florida. Some preliminary work has been done with a view to establishing standard grades for the five remaining types which include Broadleaf and Havana seed tobacco of Massachusetts, Connecticut, New York, and Pennsylvania as well as Puerto Rican filler tobacco.

The Production and Marketing Administration is at work on the development of official or tentative standards for the 14 types of tobacco on which official standards have not been established. Whatever modification is necessary in the official standard grades established for the 12 types is considered at a tobacco standards and research laboratory.

INSPECTION

Even more so than for most other commodities, it is difficult for farmers to learn and understand the system that buyers use to appraise the grade and quality and to determine the price they will pay for tobacco. Most of the tobacco grown in the United States (about 90 per cent) is sold at loose-leaf auction markets. The buyers represent the large tobacco manufacturing companies and leaf dealers, each of which has private grades and grade symbols. These are subject to change. The sale is conducted by warehouse operators, commission men for the growers. Sales are recorded only to the extent necessary for computing the gross sale amount for each grower in settling accounts. The tobacco of any type includes an extraordinary range of qualities, characteristics, and values based on technical considerations.

As a result, the grade designation that the buyer places on a lot of tobacco at the time of sale has little, if any, meaning to most farmers. Yet prices for the various grades on a single day's sale may range from 3 to 50 cents a pound. The rapidity of the sales, the hazards of buyers' snap judgments of quality, and changes in the quality of daylight are such that in many sales growers cannot get prices corresponding to the value of their tobacco on the prevailing market. On top of this, very much tobacco is inefficiently prepared for market.

HAZARDS

Several hazards confront tobacco growers when they sell their tobacco at a public auction market:

1. Buyers understand the technical considerations involved in the quality of tobacco for specific uses, but most growers (sellers) do not.
2. Because most lots of tobacco are sold very rapidly—at a rate as high as 600 or more an hour—bids are based on snap judgments which often are bad.
3. Very often these snap judgments result in bids of prices that are considerably below the current average price paid for tobacco of similar quality.
4. In the absence of inspection service, growers have no systematic way to learn what their tobacco is worth.

Avoidable losses to growers from these causes have been estimated conservatively at between 5 and 10 million dollars a year—to say nothing of the losses resulting from faulty preparation of tobacco for market.

That is what the grower is faced with. And that is where the Tobacco Inspection Act comes in. Among other things, this act provides that the Secretary of Agriculture may:

Establish standards for tobacco by which its type, grade, size, condition, or other characteristics may be determined; demonstrate these standards; and designate certain auction markets for inspection service after determining by referendum that two-thirds of the growers voting favor designation. Any tobacco offered for sale on these designated markets must be inspected and certified without fee by authorized inspectors.

With specific information on grade and on current selling prices, the grower can arrive at the approximate value of his tobacco and decide whether the auction bid price is fair and reasonable in the light of existing market conditions. When the bid price is substantially lower than the current average for the grade, the farmer may immediately reject the sale and demand a resale. Auction sales of tobacco are at the rate of 300 to 500—and often 600—lots per hour. So errors of judgment leading to unreasonably low prices are numerous.

To make price information available, federal market reporters follow the sale and record required data from the basket tickets. These tickets contain all the information essential for price reports—the grade, number of pounds, and price. Records are obtained from the different markets that sell the same type of tobacco, and they are combined and compiled in field offices for the publication of mimeographed daily and weekly reports covering each type area. These reports are furnished to growers on the auction floors and further disseminated by press and radio. In addition, season market reviews are issued covering the types of tobacco sold at auction. These reviews include average prices for each grade, average prices for the markets, the total quantity sold on each market, statistics to show the percentage distribution of the crop according to quality factors, and other related market information.

Therefore, because on all auction markets the grower has the privilege of rejecting a sale and calling for a resale, this information service goes to the heart of the principal weaknesses of the auction marketing system. Through the services provided under the act farmers have an opportunity to learn to put their tobacco in better condition for marketing. Then when the tobacco is sold at auction the farmer can look at the government grade on each lot of his tobacco, look at the price that has been offered for the tobacco, and look at the prevailing price published for each particular grade. If the price offered is significantly below the prevailing price for a particular grade of tobacco, the farmer has a right to reject the sale on that grade and to resell the tobacco later.

For example, J. A. Singleton, Route 2, Camilla, Georgia, on August 17, 1944, offered 172 pounds of tobacco for sale on the Pelham, Georgia, market. The price offered originally was 30 cents a pound. The market quotation for the particular government grade of tobacco was 41 cents a pound. Next day, on resale of the same lot of tobacco, Singleton received 41 cents a pound. That meant $18.92 (or 36.7 per cent) more for this weight of tobacco than he was originally offered.

It goes without saying that sometimes farmers reject a sale of tobacco and upon resale of that tobacco receive a price lower than the original offer. But on the average, farmers who take advantage of this grading and market news service gain substantially. And on the other side of the picture, frequently farmers who use this information will refrain from rejecting a sale when they can see they have received a fair price.

It has been possible thus far to extend inspection and market news service to only 117 auction markets. Out of a total of 147 auction markets 141 have been designated.

FRUITS AND VEGETABLES

Grades and standards also are being applied at the shipping point in the case of some vegetables.

Nearly a quarter of the total carlot shipments of cabbage in 1933-34, more than a third of the total carlot shipments of lettuce, and more than half of the total carlot shipments of onions and of late-crop potatoes in 1935-36 were inspected and graded at shipping points by the Federal-State inspection service.[10] This service provides an official certificate for each carload or truckload inspected, showing the grade and the condition of the load.

The use of the Federal-State inspection service and official United States grading standards facilitates trading between shippers and buyers. The standards furnish a basis for contracts between shippers and buyers, and the Federal-State inspection certificate indicates compliance and noncompliance with quality provisions of contracts. The certificate discourages receivers from making unwarranted rejections of shipments in the markets. It also aids in the settlement of disputes between shippers and buyers, and the detailed description of the shipment facilitates the settlement of any damage claims against transportation agencies. Federal-State inspection certificates are *prima facie* evidence in all United States courts and in most state courts.

APPRAISAL

The grading systems for the different agricultural products considered in this chapter have reached different stages of adequacy. The markets for grain have reached a fairly high stage of accuracy in establishing uniform and objective grade specifications, and in allocating different lots of grain in groups according to those specifications. The markets for livestock and for some livestock products, however, appear to be still in a rather primitive stage. Consumers' preferences are not accurately reflected back to the producer. In many cases, differences in value are not well recognized, and too nearly a "flat price" is paid for good, bad, and indifferent products. This offers very little incentive for producers to raise high quality products. It thus has a depressing effect on the average quality of the product and therefore on its consumption.

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[10] R. L. Spangler, *Marketing Commercial Cabbage*, Tech. Bul. No. 646, 1938, p. 36; *Marketing Commercial Lettuce*, Tech. Bul. No. 712, 1940, p. 27; J. W. Park, *Marketing Onions*, Tech. Bul. No. 555, 1937, p. 22, and *Marketing the Late Crop of Potatoes*, Cir. No. 475, 1938, p. 17.

This series of similar bulletins is issued by the BAE, USDA.

One reason for this is the greater difficulty of working out and applying objective specifications to livestock and livestock products. Yet adequate specifications have been worked out for most of these products, and others are in the process of being worked out. The difficulty is to get them applied. The main obstacle to improvement along these lines is the inertia of old habits and customs on the part of producers, dealers, processors, distributors, and consumers.

PART III

REDUCING THE COSTS OF MARKETING

CHAPTER 15.

The Cost of Marketing Farm Products

The Bureau of Agricultural Economics at Washington has computed the costs for what it calls a "market basket" of food consumed by an average family of three in the United States for each year since 1913.

The make-up of this market basket and the relative importance of each item in it is a matter of interest. This make-up is shown in the first two columns of Table 20. The marketing margins and the farm value of each product are shown in the rest of the table.

TABLE 20

THE MARKET BASKET: RELATIVE IMPORTANCE OF FOOD ITEMS IN TERMS OF RETAIL COST; EQUIVALENT FARM VALUE; AND MARKETING CHARGES, 1935–39
(Made up from Tables 1 and 3, BAE, USDA Misc. Pub. 576, 1945)

Item	Percentage of Commodity Group	Percentage of Market Basket	Retail Value* *(dollars)*	Marketing Charges† *(dollars)*	Farm Value‡ *(dollars)*	Farm Value as Percentage of Retail Value
Meat products:						
Beef	41.5	10 8	36.58	16.22	20 36	56
Lamb	5.1	1.3	4.48	2 28	2 20	49
Pork, including lard	45.3	11 7	39.87	18.17	21.70	54
Other	8.1	2 1	7.16	3.98	3.18	44
Total	100.0	25.9	88 09	40.65	47.44	54
Dairy products:						
Butter	20.5	4.0	13.77	4.38	9.39	68
Cheese, American	4.4	.9	3.00	1.42	1.58	53
Condensed and evaporated milk	5.1	1.0	3.44	2.10	1.31	38
Fluid milk	43.0	8.5	28.91	12 88	16.03	55
Other	27.0	5.3	18.15	12.99	5.16	28
Total	100.0	19.7	67.27	33.80	33.47	50
Poultry and eggs:						
Eggs	51.6	4.0	13.66	3.16	10.50	77
Chickens	35.9	2.8	9.49	4.13	5.36	56
Other poultry	12.5	1.0	3.32	1.62	1.70	51
Total	100.0	7.8	26.47	8.91	17.56	66

TABLE 20—*Continued*

Item	Percentage of Commodity Group	Percentage of Market Basket	Retail Value* (*dollars*)	Marketing Charges† (*dollars*)	Farm Value‡ (*dollars*)	Farm Value as Percentage of Retail Value
Cereal products:						
Bakery products—						
Bread, white	25.3	4.1	13.92	12.15	1.77§	13
Bread, whole wheat	3.6	.6	1.96	1.76	.20§	10
Bread, rye	3.4	.6	1.89	1.68	.21§	11
Soda crackers	9.9	1.6	5.47	4.85	.62§	11
Other	24.3	3.9	13.39	12.90	.49§	11
Total grain ingredients	......	....	. .	......	3.29	..
Other bakery ingredients	.....	....	....	....	2.42	..
Total, all ingredients	66.5	10.8	36.63	30.94	5.71	16
Other cereal products—						
Corn flakes	1.5	0.2	0.80	0.71	.09§	11
Corn meal	1.9	.3	1.03	.54	.49§	48
Flour, white	16.8	2.7	9.25	4.98	4.27§	46
Hominy grits	.2	‖	.13	.10	.03§	23
Macaroni	3.5	.6	1.93	1.67	.26§	13
Rice	2.1	.3	1.17	.77	.40§	34
Rolled oats	1.5	.3	.85	.65	.20§	24
Wheat cereal	3.1	.5	1.72	1.44	.28§	16
Other	2.9	.5	1.58	1.24	.34§	22
Total	33.5	5.4	18.46	12.10	6.36§	34
Total cereal products	100.0	16.2	55.09	43.04	12.07	22
Fruits and vegetables:						
Fresh fruits and vegetables—						
Apples	6.8	1.6	5.32	3.12	2.20	41
Lemons	1.6	.3	1.22	.73	.49	40
Oranges	8.1	1.8	6.26	3.95	2.31	37
Beans, snap	2.4	.5	1.86	1.12	.74¶	40
Cabbage	2.8	.6	2.20	1.68	.52¶	24
Carrots	1.3	.3	1.02	.70	.32¶	31
Celery	2.9	.7	2.22	1.72	.50¶	23
Lettuce	3.2	.7	2.51	1.68	.83¶	33
Onions	2.6	.6	2.00	1.42	.58¶	29
Potatoes	9.0	2.1	7.01	3.50	3.51¶	50
Spinach	.8	.2	.60	.36	.24¶	40
Sweet potatoes	1.2	.3	.94	.55	.39	41
Other, including melons	31.6	7.2	24.48	16.81	7.67	31
Total	74.3	16.9	57.64	37.34	20.30	35

TABLE 20—*Continued*

Item	Percentage of Commodity Group	Percentage of Market Basket	Retail Value* (*dollars*)	Marketing Charges† (*dollars*)	Farm Value‡ (*dollars*)	Farm Value as Percentage of Retail Value
Canned fruits and vegetables—						
Peaches	1.2	0.3	0.95	0.82	0.13	14
Pears	.5	.1	.39	.35	.04	10
Asparagus	.4	.1	.35	.26	.09	26
Beans, snap	.7	.2	.55	.46	.09	16
Corn	1.6	.4	1.23	1.08	.15	12
Peas	2.3	.5	1.77	1.51	.26	15
Beans, with pork	.9	.2	.70	.50	.10	14
Tomatoes	1.7	.4	1.29	1.09	.20	16
Other	8.9	2.0	6.91	6 15	.86	12
Total	18 2	4.2	14 14	12 22	1.92	14
Prunes	0.7	0.2	0 57	0.40	0.17	30
Raisins	.9	.2	.66	.45	.21	32
Navy beans	.5	.1	.39	.21	.18	46
Other	5.4	1.2	4.18	3.05	1.13	27
Total all fruits and vegetables	100.0	22.8	77.58	53.67	23.91	31
Miscellaneous products:						
Beet sugar	9.5	0.7	2.46	1.57	0.97	39
Cane sugar	2.5	.2	.65	.39	.30	46
Corn sirup	3.7	.3	.97	.82	.15	15
Margarine	3.4	.2	.87	.63	.21	24
Salad and cooking oil	8.0	.6	2.08	1.70	.38	18
Vegetable shortening	16.7	1.3	4.33	3.17	1.16	27
Peanut butter	3.1	.2	.81	.52	29	36
Other	53.1	4.1	13.80	12 16	1.64	12
Total	100.0	7.6	25.97	20.96	5.10	20
Total, all food	.	100.0	340.47	201.03	139.55	41

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* Retail cost of 1935–39 average annual quantities of farm food products purchased per family of three average consumers.

† Marketing charges are exclusive of Federal marketing taxes, therefore are not always the difference between retail cost and farm value.

‡ Adjusted for byproduct values, and for processing tax payments in 1935.

§ Farm value of grain only

‖ Less than 0.05.

¶ Estimated for the 5-year period by using farmer's share for 1937–39 applied to the 1935–39 average retail cost.

The average margins for 1935–39 and for 1943 are shown graphically in Figure 37. This figure shows the wide differences in the shares received by farmers for different farm products. These differences are closely related to the amount of processing involved

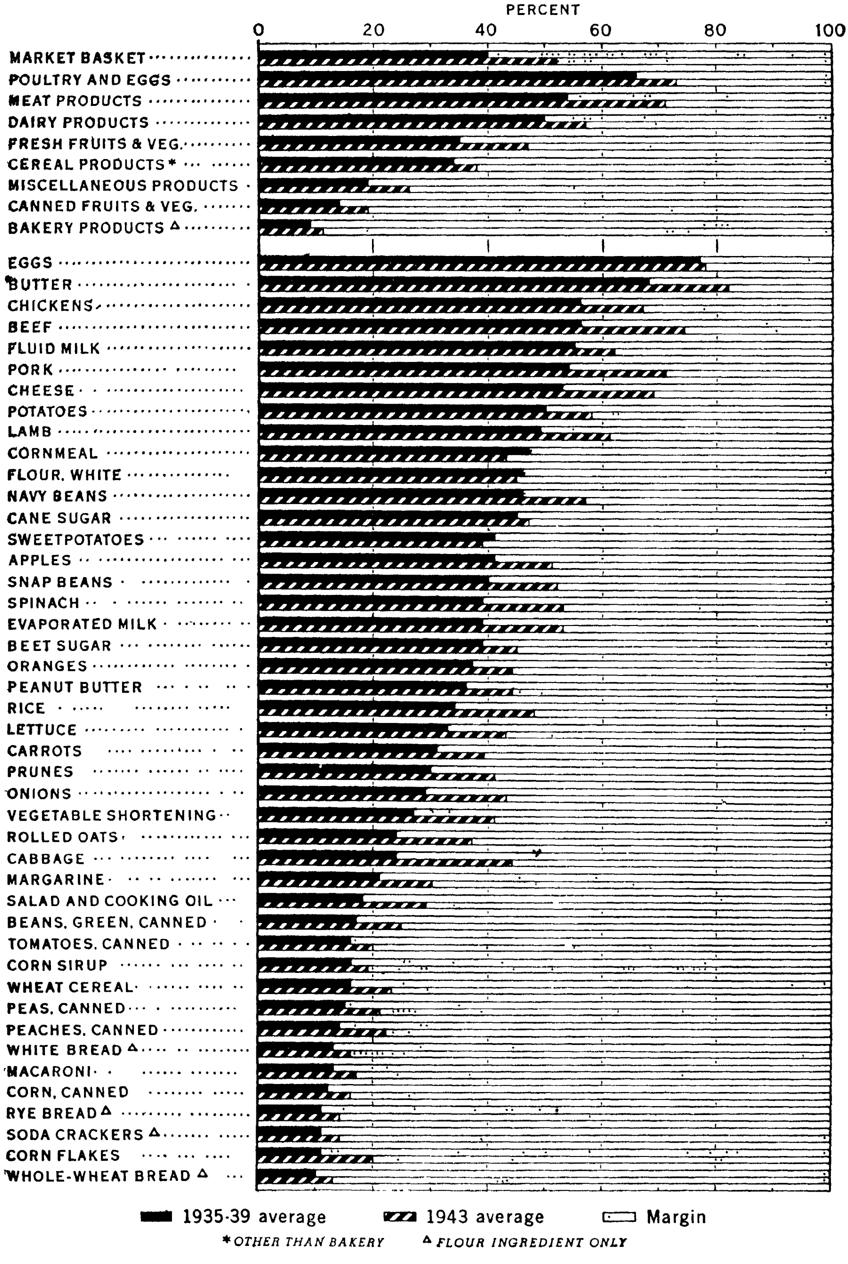

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FIG. 37.—Farm food products. Farmer's share of retail cost, 1935-39 average, and 1943.

along with the marketing of the product. Eggs, at the top of the list, reach the kitchen in the same form in which they left the hen. But bread and soda crackers, at the bottom of the list, are in far different and more expensive form than the wheat originally produced by the farmer.

Table 20 shows that during 1935–39, the total market basket cost on the average $340.47 per year. Marketing charges amounted to $201.03. Farmers received the difference between these two amounts, plus a few cents in sugar payments, totaling $139.55. This is 41 per cent of retail cost of the market basket. That is, farmers received 41 cents of the consumer's dollar spent for food. Exclusive of producer payments, they received 40 cents of the consumer's food dollar.

Most farmers believe that the share the middleman takes out of the consumer's dollar—60 per cent, as shown here—is inordinately large. Many a farmer who sells a load of cattle at 10 cents a pound and then sees steak priced at 30 cents a pound in the butcher shops feels that he has been gypped. If he eats dinner in a restaurant before he goes home, he is likely to growl when the restaurant keeper charges him $1.00 for a steak dinner. He knows that only half his steer is edible at all, that only a small percentage of the edible half is steak, that his dinner included several other items of food besides the steak, and that cooks and waitresses can't work for nothing. But still he feels that there's something wrong somewhere. Similarly, when he sells a load of corn at $1.00 a bushel, and then has to pay the equivalent of several dollars a bushel for corn flakes, he feels aggrieved. He feels considerably more aggrieved when the price of corn goes down to 50 cents a bushel but the price of corn flakes remains unchanged.

How much of this feeling is justified? Are these middlemen mostly parasites, fattening on the farmer? Are they making huge profits, or are they just plain inefficient? Or are their costs inherently high, just as the farmer's costs are?

The rest of this book is devoted to answering these questions. In the remainder of this chapter, the marketing margins, costs, and profits for food as a whole are first examined. In the chapters that follow, a closer look is taken at the separate marketing systems for different products, one product at a time.

CHANGES IN MARGINS OVER PERIODS OF TIME

Table 21 and Figure 38 show that the percentage of the consumer's food dollar that gets back to the farmer changes from year to year. When retail prices decline or rise, most of the impact of that change falls upon farm prices. The change is not distributed equally or proportionately between the marketing margin and the farmer; the marketing margin remains comparatively stable. When retail prices fall, margins in dollars and cents fall less than prices; in percentage terms they rise.

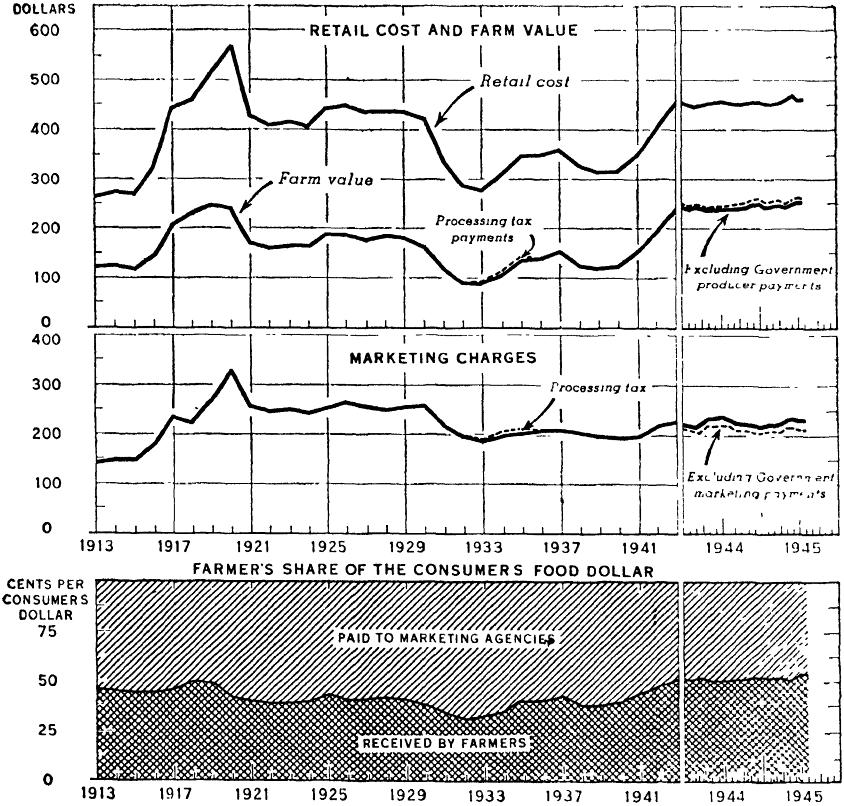

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FIG. 38.—Annual changes in retail cost, farm value, marketing charges, and farmer's share of consumer's food dollar, 1913-45.

During 1932, for example, at the bottom of the great inter-war industrial depression, the farmer's share of the consumer's food dollar declined to a record low of 32 per cent. This was a period of very low retail prices. During World War II the farmer's share rose to a record high of 55 per cent. This was a time when prices were high. In addition, price ceilings held retail prices down more

TABLE 21

The Market Basket: Retail Cost of 1935–39 Average Annual Purchases of Farm Food by a Family of Three Average Consumers, Farm Value of Equivalent Quantities Sold by Producers Adjusted for Value of Byproducts, Marketing Margin, and Farmer's Share of the Consumer's Food Dollar, 1913–44

(From Table 2, BAE, USDA Misc. Pub. 576, 1945)

Year	Retail Cost* (*dollars*)	Farm Value Adjusted for By-products† (*dollars*)	Farm Value Plus Government Producer Payments‡ (*dollars*)	Margin (*dollars*)	Marketing Charges (including tax and payment adjustments§) (*dollars*)	Farmer's Share‖ (*percentage*)	Marketing Charges as Percentage of Retail Cost
1913	264	124	...	140	140	47	53
1914	272	125		147	147	46	54
1915	267	120	...	147	147	45	55
1916	321	145	...	176	176	45	55
1917	442	210	...	232	232	48	52
1918	458	235	...	223	223	51	49
1919	513	250	...	263	263	49	51
1920	568	245		323	323	43	57
1921	427	172	...	255	255	40	60
1922	408	163	...	245	245	40	60
1923	413	166		247	247	40	60
1924	406	166	...	240	240	41	59
1925	442	191	...	251	251	43	57
1926	448	188		260	260	42	58
1927	434	180	...	254	254	41	59
1928	435	185	...	250	250	43	57
1929	435	183	...	252	252	42	58
1930	421	165	...	256	256	39	61
1931	339	121	...	218	218	36	64
1932	284	92	...	192	192	32	68
1933	276	90	92	186	184	33	67
1934	311	107	116	204	195	34	63
1935	347	138	147	209	200	40	58
1936	349	143	...	206	206	41	59
1937	362	156	...	206	206	43	57
1938	328	128	...	200	200	39	61
1939	316	122	...	194	194	39	61
1935–39 av.	340	137	139	203	201	40	59
1940	317	128	...	189	189	40	60
1941	347	154	...	193	193	44	56
1942	407	196	...	211	211	48	52
1943	458	237	239	221	226	52	49
1944	451	238	246	213	225	53	50

* Calculated from retail prices collected by the Bureau of Labor Statistics and the Bureau of Agricultural Economics.

† Payments to farmers for equivalent quantities of farm produce minus imputed value of byproducts obtained in processing.

‡ Includes government payments to producers of selected products except benefit, conservation, and parity payments after 1935.

§ Marketing charges equal margin minus processor taxes plus government payments to marketing agencies.

‖ Farmer's share of consumer's food dollar calculated from farm value before addition of producer payments.

than prices at the farm, and processor subsidies[1] on certain foods (amounting to 8 per cent of the retail value of these foods) plus the large volume of sales, permitted distributors to operate profitably

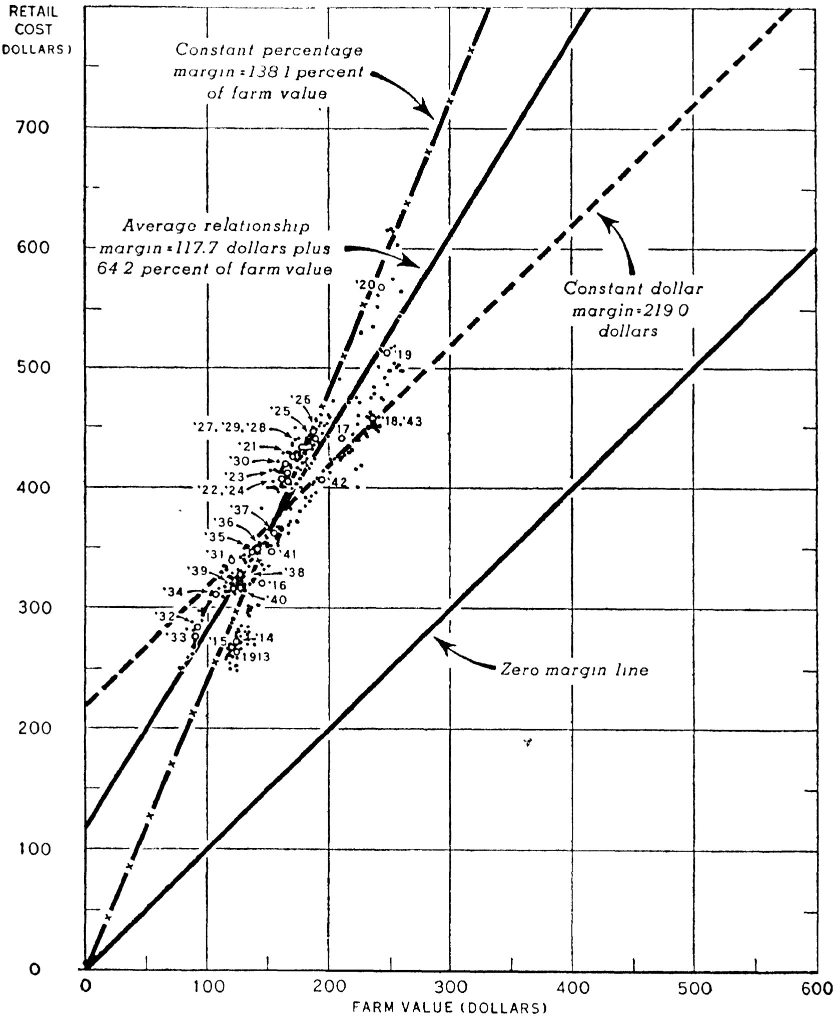

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FIG. 39.—Relation of monthly retail cost of 1935-39 average annual family purchases to farm value, 1913-44. (Family purchases represent purchases by a family of three average consumers. Farm value is payment to farmer for equivalent produce adjusted for value of by-products.)

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[1] Subsidies increased the farmer's percentage so that his share plus the share for marketing charges total more than 100 per cent, in some instances.

at much narrower margins than normal. A substantial decline in the farmer's share of the consumer's food dollar is expected to take place after these war-time conditions have come to an end.

The precise nature of the relation between retail prices and farm prices is shown in Figure 39. The pattern of relationship illustrated for the market basket in Figure 39 shows the fitted line of relationship lying about halfway between the line representing a fixed margin in terms of dollars and the line representing a fixed percentage margin in terms of ratio to retail cost or ratio to farm value. In this chart the size of the margin is measured by the height of any point above the zero margin line. The fitted average pattern of relationship suggests that the food-marketing margin for the total market basket consists of elements of which about 50 per cent are stable, failing to reflect variation in response to price changes, and 50 per cent vary in direct proportion to changes in retail and farm prices.

Patterns of relationship estimated for several of the important commodity groups show considerable variation in the character of the fitted relationship when compared to the fixed dollar margin and the constant percentage margin. The fitted-margin line for the meat-products group falls very close to the fixed dollar margin line and apparently contains only minor elements which vary proportionally to prices. On the other hand, the margins for fruits and vegetables and for the poultry and eggs group conform more closely to the constant percentage margin, indicating that marketing charges for these groups vary widely with fluctuations in prices at retail and at the farm. The pattern for dairy products is rather similar to that shown for the entire market basket.

MARKETING MARGINS MORE STABLE THAN PRICES

The relative stability of marketing margins in comparison with the variation of retail prices is a matter of great importance in determining the influence of the food-marketing-margin structure upon prices and incomes received by farmers. If margins were always a fixed proportion of retail prices or farm prices, then percentage changes in retail and farm prices would be identical and farm incomes would fluctuate to the same degree as fluctuation of consumer expenditures. However, the apparent tendency of marketing margins toward greater stability than that observed in retail prices and the existence of numerous rigidities in the market system have an unfortunate cumulative effect during periods of business recession upon prices and incomes of farmers. A perfectly stable margin equivalent to a constant dollar margin would multiply the variation in retail prices and in consumers' expenditures into much wider relative fluctuation in terms of the prices and incomes received by farmers. This may be illustrated by meat products for which the marketing margin is rather close to a fixed dollar margin, as indicated in the preceding paragraph. Beginning with a period during which the farmers received 50 cents out of the consumer's dollar spent for meat products and assuming that the meat-marketing margin was constant in terms of dollars per unit, a 25-per cent decline in the retail price would produce a 50-per cent decline in prices received by farmers and would reduce the farmer's share from 50 cents to 33 cents. So extreme an example seldom occurs in fact, but the tendency toward stability in marketing margins has this type of effect when retail prices decline—to accentuate the decline in farm prices and to reduce the farmer's share of consumers' expenditures.

Marketing margins are more stable than prices because some of the elements of cost on which they are based remain comparatively constant. Transportation costs, store rentals, taxes, etc., change only slowly, and to a small extent, over periods of time. If these costs

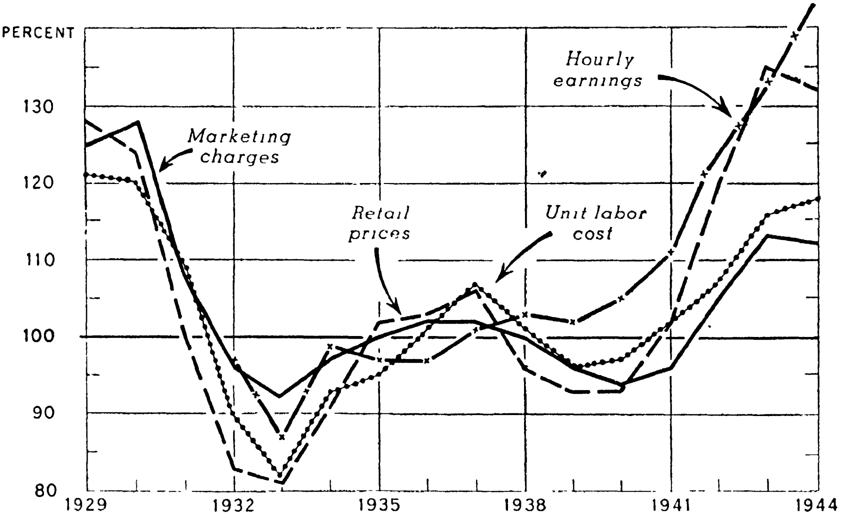

FIG. 40.—Marketing charges and retail prices of domestic farm food products, hourly earnings of food marketing employees, and labor costs per unit of farm food products marketed, United States, 1929-44. (Index numbers, 1935-39 = 100)

(and profits) remained absolutely constant in dollars and cents, to that extent marketing margins would remain constant in dollars and cents too. The flexibility that marketing margins do have results chiefly from the flexibility that exists in the labor costs per unit of farm food products marketed. These costs vary directly almost as much as retail food prices vary, as shown in Figure 40 and Table 22.

TABLE 22

MARKETING CHARGES AND RETAIL PRICES OF DOMESTIC FARM FOOD PRODUCTS, HOURLY EARNINGS OF FOOD MARKETING EMPLOYEES, AND LABOR COSTS PER UNIT OF FARM FOOD PRODUCTS MARKETED, UNITED STATES, 1929–44
Index numbers (1935–39 = 100)
(*1946 Agricultural Outlook Charts*, BAE, USDA, p. 16)

Year	Retail Prices*	Marketing Charges†	Hourly Earnings‡	Unit Labor Cost§
1929	128	125	. . . . .	121
1930	124	128	. .	120
1931	100	108	. . . .	109
1932	83	96	97	90
1933	81	92	87	82
1934	91	97	99	93
1935	102	100	97	95
1936	103	102	97	101
1937	106	102	101	107
1938	96	100	103	101
1939	93	96	102	96
1940	93	94	105	97
1941	102	96	111	102
1942	120	105	121	107
1943	135	113	133	116
1944	132	112	144	118

* Calculated from retail cost of a family market basket of all farm food products.

† Calculated from the spread between retail cost of the market basket and payments to farmers for equivalent produce minus marketing taxes plus government payments to marketing agencies.

‡ Weighted average of hourly earnings of all employees engaged in retail food stores, wholesaling of food products, food processing, and transportation of farm food products.

§ Unit labor cost is the quotient of the total marketing payroll, adjusted to exclude labor prorated to lend-lease and military supplies, and the physical volume of food marketed for civilian consumption.

WHY ARE MARKETING COSTS HIGH?

Many people are taken aback when they discover how much of the consumer's dollar is required to cover the costs of distribution. There must be something altogether wrong, they feel, when it costs more to get a good from producer to consumer than it did to produce it in the first place; there must be excessive wastes or inefficiency or huge profits somewhere along the line when distribution costs more than production.

Where does the trouble lie—in excessive wastes, inefficiency, or large profits—or in all three? This question has been investigated on the basis of fairly adequate statistical information, and some preliminary conclusions can be reached.[2]

HIGH MARKETING COSTS DO NOT NECESSARILY MEAN INEFFICIENCY

The fact that more than half of the consumer's dollar now goes for marketing costs does not necessarily mean that "something must be wrong with our distributing system." It is primarily an evidence of important changes that have been taking place in the whole producing and marketing system. These changes were presented in Chapter 1 and are reviewed briefly here.

Place. The most obvious change of this sort is a matter of geographical space. Along with the development of the resources of the United States has gone an increasing specialization in production. This specialization in production increases marketing costs, but it may decrease production costs more than enough to offset that increase.

Today, for example, grapefruit is grown in Florida and Texas, lemons in California, oranges in California and Florida, and lettuce in California and Arizona; they are then shipped across the continent and sold by the carload in New York.[3] The marketing costs are high. But the costs of production are so low that the total cost of production and marketing combined is lower than the cost of similar produce raised in New York. The existence of high marketing costs in itself does not necessarily mean that something is wrong. Generally, it means only that the product is being grown in the most efficient low-cost producing area, and that the total cost (of production and marketing) is less to the consumer than if the product were grown close at hand and the proportion of marketing costs were low.

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[2] See Paul W. Stewart and J. Frederic Dewhurst, *Does Distribution Cost Too Much?* Twentieth Century Fund, N. Y., 1939.

[3] "Even though western growers and shippers are confronted with high transportation and large overhead cost for grading and packing produce in central packing sheds, most of their products are widely distributed to the markets of the country. For example, among the vegetables the crops of lettuce, carrots, celery, cantaloupes, asparagus, potatoes, tomatoes, cauliflower, and peas produced in California have almost nationwide distribution at certain seasons of the year. Fruits and vegetables produced in the Lower Rio Grande Valley of Texas also enjoy wide distribution to the important market centers of the North and East. Partially offsetting the high cost of placing their produce in the markets is the fact that growers and shippers in Texas and California, as well as some other states, have a shipping season which continues more or less throughout the year; whereas the shipping season for many competing areas is limited to comparatively short periods. Without this climatic advantage producers in these areas would find it even more difficult to grow produce profitably." Reginald Royston and Raymond L. Spangler, *Important Trends in National Fruit and Vegetable Production and Distribution* (mimeo.), AMS, USDA, 1940.

The high proportion of the consumer's dollar that goes to cover marketing costs does not necessarily mean that "there are too many middlemen between producer and consumer," any more than it means that the producer and consumer are too far apart geographically. A middleman only gets in between the producer and consumer in the first place by getting the goods from the one to the other more cheaply than they can do it themselves without his help. In that case eliminating the middleman would be a step backward in marketing efficiency, not forward. A middleman who persists in a situation that has changed so that he can no longer earn his keep is soon eliminated by lack of business. It is the middlemen who have some monopoly position who are not eliminated by the ordinary processes of competition. Cases of this sort require special individual attention through the appropriate governmental regulatory agencies or the attorney general's office; it is difficult to make an accurate blanket statement as to how important a factor they are in the cost of distribution.

Time. A second change in the marketing system is the increasing amount of time utility embodied in consumers' goods. Many foods that used to be consumed only in certain seasons of the year are now available to consumers the year around. The development of producing areas in warmer and sometimes wetter (irrigated) southern and western areas, where many fruits and vegetables can be grown "out of (northern and eastern) season" discussed in the preceding section, is one reason for this; but the development and improvement of refrigerated and other kinds of storage has contributed also. Butter, eggs, poultry, pork, and more recently, fruits and vegetables handled by "quick-freezing" methods, are examples of this storage over periods of time. The increase in canning, which used to be done mainly in the home, but now chiefly in factories, is another example. (Canning involves a change in form too, and is discussed under that heading in the next section.) All of these things, while desirable and economic (in the sense of being worth more than they cost), cost money, and widen the spread between the producer and the consumer.

Form. A third change in the marketing system has arisen from considerations of consumption, rather than production. It is a matter not of place or time, but of form. Consumers under the pressures of urbanization have been demanding that their products be put up in more and more elaborate form.

Revolutionary developments of this character have taken place in our own lifetimes. The contrast between conditions in our early childhood (especially if it was spent on the farm) and at the present time, is striking. Our parents or grandparents bought their supplies in large quantities. They bought flour in 100-pound sacks, or by the barrel. They bought a barrel of apples in the fall, and it lasted all winter. They bought sugar in 50- or 100-pound sacks. These goods were not delivered by the grocery boy into the kitchen either; they were hauled home by the buyers themselves.

Today we buy foods in small quantities, and they require a minimum of "processing" in the home. We buy very little flour, except for occasional pastry. We buy all our bread, a good share of our cookies, and some of our cakes, ready-made. We buy much of our foods in cans, all cooked and ready to serve. Frozen foods are coming into use. Our bacon is already sliced and wrapped in cellophane. The goods our parents bought were only part way along toward the finished form; in those days we carried them the rest of the way in our kitchen and sewing room. The goods we buy today are ready to eat or wear, and it is only natural that the extra costs involved in (1) processing them to this more finished form, (2) handling them in much smaller units, and (3) wrapping them in expensive packages widen the margin between what we pay and what the producer gets.

All this means that we have been shifting more and more of the processing of our goods from the home to the factory or processing plant. We spend less money for seamstresses and cooks and kitchen maids around the house and more money for the processors' services embodied in the goods we buy. We also get less unpaid household labor from our women and children. Our kitchens have shrunk from the large and bustling rooms of colonial days; they have become compact labor-saving mechanized "kitchenettes" with just room for one person to turn around. The widening of our marketing margins represents not so much a social loss as a social transfer of a good deal of activity from the home to the factory. In view of the greater efficiency of the factory, this may represent a net social gain.

ADVERTISING COSTS

Advertising costs attract a lot of public attention. They amount to a considerable percentage of the value of certain highly advertised products, but the total advertising bill is only a comparatively small percentage of the value of all consumers' goods. The total advertising bill in 1937 was about two billion dollars, distributed as follows:[4]

Newspapers	$570	million
Premiums	350	"
Direct mail	300	"
Magazines	165	"
Radio	165	"
Car cards, store and window displays, theatre programs, sky writing, etc.	100	"
Business papers	50	"
Outdoor	50	"
Farm papers	18	"
Agency commissions, art, etc.	200	"

Most of this two billion dollars can be charged to commodity distribution, but not all of it, since it includes some advertising expenditures for amusement and other services, not goods. Consumers paid nearly 66 billion dollars for goods in 1929. The cost of advertising, therefore, averaged nearly 3 per cent of the value of finished goods. This is nearly 5 per cent of the 38.5 billion dollars total cost of distribution.

PROFITS[5]

Another component of the spread between farmer and consumer is the profits or earnings of capital invested in marketing enterprises. The notion is not infrequently held that exorbitant profits are largely responsible for the present width of this spread and that the solution is merely to force middlemen to disgorge their profits. Unfortunately the matter is not so simple as this.

The profits of some of the leading food corporations and the relation of these profits to total marketing spreads are shown in Table 23. The ratio of earnings to capitalization—which gives a close approximation to the rate of return on invested capital for the companies involved—has varied from as high as 23.9 per cent for the grocery chains in 1928 to as low as 0.4 per cent for the large meat-packing concerns in 1932. In no peace-time year since 1925 have the meat packers netted more than 6 per cent on their investment, which makes it difficult to establish a case against them on the grounds that their profits have been excessive. On the other hand, the corporate grocery chains at one time were among the most profitable enterprises to be found anywhere in the country. They enjoyed these profits, however, not because they had a monopoly of retail food distribution, but mainly because their competitors were unable to match them in distributive efficiency. In this connection it is significant that chain-store profits have fallen steadily as competition among the chains themselves has increased and as the independents have been able to meet them on more equal terms through their own voluntary and cooperative associations.

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[4] Stewart and Dewhurst, *op. cit.*, pp. 225-26.

[5] Most of this section is adapted from A. C. Hoffman and F. V. Waugh, "Reducing the Costs of Food Distribution," *1940 Yearbook of Agriculture*, USDA, pp. 627-37.

TABLE 23

RATIO OF EARNINGS TO CAPITALIZATION AND PROFIT MARGINS OF LEADING GROCERY CHAINS, DAIRY COMPANIES, AND MEAT PACKERS, 1928, 1932, AND 1936
(Expressed in percentages)

Year	Ratio of Earnings to Capitalization*			Profit Margins†		
	5 Grocery Chains	4 Dairy Companies	4 Meat Packers	5 Grocery Chains	4 Dairy Companies	4 Meat Packers
1928 .	23.9	18.0	5.5	3.1	7.3	2.1
1932......	14.7	7.1	.4	2.9	4.8	.2
1936....	11.5	10.0	5.6	2.1	4.4	2.0

* Earnings represent the amount of money available for dividends on stocks, interest on bonded debt, and federal income taxes. Capitalization represents the sum of the outstanding stocks, surplus reserves, and long-term debt.

† The profit margin is computed by dividing the earnings of a corporation by its dollar sales.

More significant for our present purpose than the ratio of earnings to invested capital is the profit margin. The profit margin is computed by dividing the earnings of a corporation by its dollar sales. It therefore shows how important these earnings are as a component of marketing spreads.

It is evident from the profit margins as shown in Table 23 that earnings do not represent a very large part of the margin between farmer and consumer. Out of every dollar of sales made by the five leading food chains in 1936, only about two cents went to the capital invested in these enterprises. For the big dairy companies and meat packers, the corresponding figures are 4.4 cents and 2 cents, respectively.

Profits at times constitute a large item in the case of certain goods. One of the most extreme illustrations of this was the fact that in 1932 the profits of the big tobacco companies were almost as great as the total amount they paid American farmers for their tobacco crop.[6] Some dairy companies have also made large profits. But for every outstanding example like these there are many other cases where profits are small or negative, even in good years. In 1936 half of all of the trading or distributing corporations in the United States showed a loss at the end of the year. The net profits of the entire group were a little more than 2 per cent of their sales. That is, they constituted a little more than two cents of the consumer's dollar. Most of the smaller firms—partnerships and individuals—probably made a smaller percentage profit than this. On the other hand, most goods pass through more than one pair of hands on their way from the producer to the consumer, and profits cumulate on these. Estimates are made, taking all goods into account, which indicate that the total profits all along the line from producer to consumer amount to about three cents out of the consumer's dollar.

THE BIGGEST SINGLE ITEM IN DISTRIBUTION COSTS IS RETAILING

Farmers have often complained about the costs which are most apparent to them—the margins taken by local dealers, freight rates, terminal marketing charges, and so forth. It is natural for a man to attack a difficult and complicated problem at the points that are closest to him. But the greatest part of the costs of marketing is incurred not at the farmer's end of the marketing machinery, but at the consumer's end—in the retail store. This is shown in Table 24.

The large size of the retailing margin is also shown in the data for foods alone (not for all goods as shown in Table 24). The margin for foods is shown in Table 25, which is put up on a different basis from Table 24. Table 24 shows the percentages of the costs of distribution (the 59 cents of the consumer's dollar) that go to each distributing agency; Table 25 shows the percentage of the consumer's dollar going to each agency.

These tables show that the largest single item in the costs of distribution is the cost of retailing. This opens up an interesting

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[6] E. G. Nourse, *Marketing Agreements Under the AAA*, Brookings Institution, 1935, p. 41.

TABLE 24

DIVISION OF TOTAL MARKETING COSTS 1929*

	Total Costs of Distribution (billions of dollars)	Percentage of Total Costs of Distribution
Manufacturers' distribution cost. .	9 1	24
Transportation cost	8 8	23
Wholesalers' cost. .	7.0	18
Retailers' cost. . .	12 6	33
Miscellaneous. .	1.1	2
Total. . .	38.6	100

* Table adapted from Stewart and Dewhurst, *op. cit.*, p. 118.

TABLE 25

DIVISION OF CONSUMER'S FOOD DOLLAR, 1935*

	Millions	Percentage
Farmers' share. .	$5,593	41.1
Processors' share. .	2,739	20.1
Wholesalers' share	1,232	9.0
Retailers' share. . . .	3,337	24.5
Transportation.	728	5.3
Total. . .	13,629	100.0

* *The Structure of the American Economy, Part 2, Basic Characteristics*, U. S. National Resources Committee, p. 379.

angle to the problem of high costs of distribution. Retailing costs are high partly because consumers make them high; many consumers are willing to pay higher prices in stores that have an atmosphere of quiet, elegance, and luxury (often enough including artificial refrigeration in the summer); some consumers misuse the return privilege and the credit privilege; most consumers want a wide variety of different brands of goods to choose from, even though the real differences between them may not be great; most consumers patronize the stores and the lines of goods that advertise most. Each one of these items by itself may be small, but together they add up to a large item in retailers' costs. A good many of the reasons for the high costs of distribution about which consumers complain lie pretty close to home in the buying habits of consumers themselves.

REDUCTIONS IN MARKETING COSTS

The fact that middlemen's profits take only a small percentage of the consumer's dollar has led some people to conclude that the width of the spread between producers' and consumers' prices cannot be appreciably reduced. This conclusion, however, is not valid. Half a dozen milk dealers might be handling milk distribution in a city, making no profits at all. This would not mean that margins could not be reduced; the dealers might be making no profits because the whole system of milk collection, plant operation, and delivery was inefficient. Reorganization of the plants or of the collection or delivery system might permit reductions in margins and an increase in profits, and might eventually permit reductions in prices to consumers.

The fact that middlemen's profits are small merely shows that most of the charges intervening between producer and consumer are not profits, but costs. Even if profits were wiped out entirely, that would not reduce middlemen's margins much—only about 3 per cent. But if the *costs* of marketing could be substantially reduced, that would have a substantial effect on margins and farm and retail prices.

The rest of this book, therefore, deals with the problem of reducing the costs of marketing. Marketing methods and costs differ for each commodity, so the most important farm products are considered separately, one chapter to each. In each commodity chapter, emphasis is placed upon the particular trouble spots in the marketing of that commodity, where costs stick up like a sore thumb and could be reduced by the measures proposed.

CHAPTER 16.

Reducing Grain Marketing Costs

The three great grain crops in the United States are corn, wheat, and oats. Before World War II, corn production averaged about 2.5 billion bushels; wheat, about 0.8 billion; and oats, about 1 billion. A bushel of wheat, however, weighs nearly twice as much as a bushel of oats (60 pounds as compared with 32), so wheat ranks ahead of oats in total weight produced.

Wheat ranks even ahead of corn from the marketing point of view. From 85 to 90 per cent of the corn crop is fed to livestock, mostly on the farm where it was grown, whereas the bulk of the wheat crop is sold off the farm and moves through commercial channels into human consumption. Usually about 500 million bushels of wheat is used for human consumption,[1] the rest of the crop being exported, fed to livestock or used for seed.

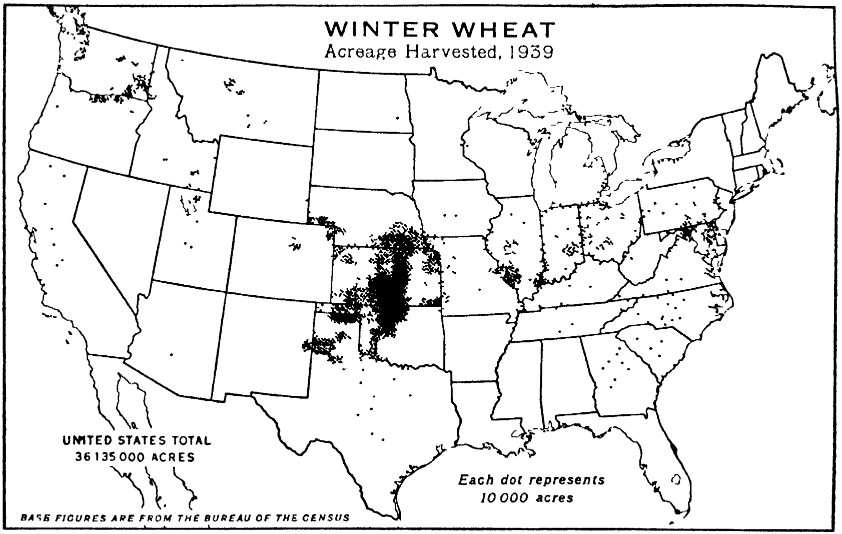

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FIG. 41.—Winter wheat production areas in the United States.

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[1] *Agricultural Statistics 1943,* USDA, p. 19.

The several kinds of wheat—hard winter, soft winter, hard spring, Durham, etc.—are grown in the different areas shown in Figures 41 and 42. Wheat marketing problems differ to some extent in the different areas, so in parts of this chapter the different areas are considered separately.

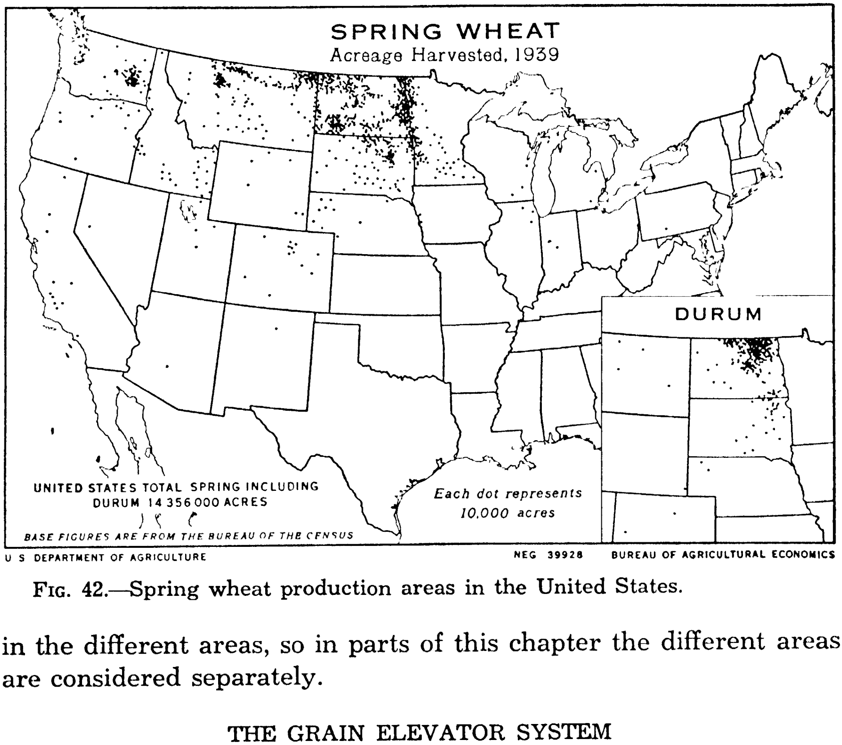
SPRING WHEAT
Acreage Harvested, 1939
DURUM
UNITED STATES TOTAL SPRING INCLUDING DURUM 14 356 000 ACRES
Each dot represents 10,000 acres
BASE FIGURES ARE FROM THE BUREAU OF THE CENSUS

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FIG. 42.—Spring wheat production areas in the United States.

THE GRAIN ELEVATOR SYSTEM

There are 22,289 grain elevators in operation in the United States, with a total capacity of 1,667,192,000 bushels.[2]

These grain elevators cover a wide range in size. The smallest are most numerous—10,000-bushel to 100,000-bushel local elevators that break the skyline at small country towns out in the western plains. The medium size elevators at the sub-terminal markets—large country assembly and dispersal points, sometimes with milling facilities, such as Wellington, Kansas; Fremont, Nebraska; or Des

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[2] *Grain Storage Capacity and Stocks,* (Mimeo.), BAE, USDA, May 10, 1943. This total includes all commercial storages, including idle establishments that could be operated readily. The establishments include elevators, warehouses, flour and feed mills, corn, soybean, and flaxseed product plants, malting plants, breweries, distilleries, bean cleaning plants and rice mills. Not included are storages on farms, steel and wooden bin storage owned by the Commodity Credit Corporation, and numerous small feed stores in the North Atlantic States with capacities less than 2,000 bushels.

Moines, Iowa—range up to a million bushels capacity, and in a few cases, more. At the terminal markets, the largest elevators range up to 11 million bushels capacity.

Each year these grain warehouses or elevators handle, on the average, about a billion bushels of grain from the eight major grain crops. Most of this grain comes on the market during the first few months after harvest each year.[3] As much as a third of the wheat crop is sold by farmers in July, in most cases straight from the field; on the average from 1930 to 1939, the percentages of the wheat crop sold from the farm during the first three months of the season were: July, 25.6; August, 18.2; September, 11.6. The total for the three months was 55.4. The corresponding (three-month) figure for oats was 40.9.[4]

COUNTRY ELEVATORS

In 1939, more than two-fifths (43 per cent) of the country elevators in the United States were "line" elevators—groups or lines of elevators controlled in each case by a central head office. About 34 per cent were independent or individually owned, 19 per cent were farmers' cooperatives, and 4 per cent were miscellaneous.[5]

SPRING WHEAT AREA

Local elevators in the spring wheat area—Minnesota, North and South Dakota, and Montana—are comparatively large, and they have been growing larger in recent years with the advent of govern-

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[3] Corn is an exception. About 80 per cent of the corn crop is fed on the farms where it was grown. The remaining 20 per cent of the crop that is sold as cash corn is sent to market in fairly even percentages each month through the year, partly because corn needs to dry out in the crib on the farm for several months before it is dry enough to remain in good condition as shelled corn in the channels of trade, and partly because most corn growers who use the bulk of their crop for feeding their own livestock keep any surplus above their own needs until well along in the season when the next crop is assured. The percentage of the sales of corn by farmers, by months, rises only to 11.1 in each of the highest two months after harvest (November and December).

[4] *Agricultural Statistics 1942,* USDA, pp. 17, 59, and 75.

[5] *Sixteenth Census of the U. S.: 1940. Wholesale Trade, 1939,* U. S. Summary, pp. 4, 19. The percentages for 1918, as given in the *Report of the Federal Trade Commission on the Grain Trade,* Vol. 1, *Country Grain Marketing,* 1920, Table 11, p. 47, were:

Line elevators	28.42
Independent	35.46
Cooperative	21.36
Mill	14.50
Maltster	.26
Total	100.00

ment storage programs. The average capacity of the local elevators in North Dakota, for instance, in 1938 was about 37,000 bushels; in 1942 it was about 47,000. The average size in Montana in 1942 was 43,000 bushels.[6]

Line elevators are numerous in the northern spring wheat area where most of the grain flows east through Minneapolis.[7] Furthermore, in that area many of the independent and cooperative elevators are only nominally independent; they actually operate much the same as a line elevator. Much of the early building and operation of country elevators throughout the spring wheat states was financed and managed by the grain firms of the Twin Cities.

The ownership of many of these elevators has changed since they were built. In many cases the name "Cooperative" now appears over the door. The line elevator companies have been relinquishing the ownership of some of their local houses, particularly during the past few years, but in many cases they have retained the financing of these local houses and the degree of control over the management that goes with it. To a considerable extent, therefore, even though the ownership has changed, the management of these so-called "independent" local elevators still remains in the hands of the large line-houses and commission firms in Minneapolis.

SOUTHWEST WINTER WHEAT AREA

In the other areas, many of the local elevators were originally set up and operated by large grain firms in the terminal grain markets, just as they were in the spring wheat area. But the control of these large grain firms has not persisted as it has in the spring wheat area. There are definite reasons for this.

The southwest winter wheat area—Kansas, Oklahoma, Nebraska, Texas, and Missouri—is much more diversified in its market outlets than the spring wheat area, where all grain must flow through Minneapolis or Duluth. In the southwest, Kansas City in the early days was much like Minneapolis is today. Most grain from the winter wheat states came to or through Kansas City. After the turn of the century, however, other terminal markets rose in importance and began to draw grain from the area in competition with Kansas City. Grain from the Southwest began to move through Omaha,

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[6] *Grain Storage Capacity,* (Mimeo.), BAE, USDA, April 3, 1942. The corresponding figures for other states given later in this chapter come from the same source.

[7] In 1918, 48 per cent of the elevators in North Dakota were line elevators. *Annual Report, North Dakota Board of Railroad Commissioners,* 1918.

St. Louis, St. Joseph, and the Gulf markets, as well as through Kansas City. Within the past two decades another decentralizing influence has developed in the Southwest; a number of wheat milling establishments have developed back in the producing states, such as those at Wichita, Salina, and Hutchinson in Kansas. At these milling centers sub-terminal markets have developed, and these markets short-circuit some of the grain that formerly went through Kansas City.

The line houses operating out of these terminal and sub-terminal markets are not so numerous nor so large as those in the spring wheat area. There are also more regional cooperatives, some with affiliate members, operating in the area. And large numbers of private and cooperative elevators in the southwest winter wheat area are not affiliated with any organization.

Historically, less storing has been done at country assembly points in the Southwest than in the spring wheat area. Harvest begins early in the Southwest—in June or July—and large quantities of wheat move rapidly through the local elevators into milling channels and storage elevators at the sub-terminal markets in the interior, and at the big terminal markets in the Middle West while the wheat crop in the states farther to the north is still standing in the field. That is one reason why the average size of country elevators in the Southwest is small—only about 30,000 bushels. They are primarily agencies for assembly and forwarding, not storage.

THE PACIFIC NORTHWEST

Grain harvesting and handling practices in the Pacific Northwest—Idaho, Washington, and Oregon—are in several respects markedly different or opposite from the practices followed in the Southwest. Until the late 20's, the bulk of the grain in this territory was harvested with large horse-drawn combines and sacked right in the field. Very little of this sacked grain was stored on the farm. Most of it was hauled direct from the field to the local warehouse, and stored in individual piles for each farmer. The local warehouseman acted merely as the custodian for the farmer's grain.

Most of the grain was not sold at once. It remained in store at the local warehouse until it was ready to move into consumption or export. This was the opposite of the situation in the Southwest, where, as shown above, most of the grain moved (and still moves at present) through the local elevator into storage or consumption at the sub-terminal or terminal market. For this reason, the average capacity of the local warehouses in the Northwest, including bulk and sack together, is large—about 90,000 bushels.

The handling of grain in sacks in the Northwest suited the method by which the grain was harvested, and was also well adapted to the export trade into which a large proportion of the grain moved. In recent years, however, some of these basic conditions have changed, and a marked shift from sack to bulk handling of grain has been taking place.

The movement started in the late 1920's, when farmer cooperatives in the Big Bend area of Washington began questioning the high cost of sack-handling of grain. In this area most of the wheat produced is spring wheat. It can be handled in bulk with less danger of different classes and varieties of wheat becoming mixed than in other areas of the Pacific Northwest, where both winter and spring wheat are grown in the same localities. The cooperatives led the way in building elevators to handle grain in bulk.

The shift toward bulk handling in the Big Bend country was well under way when the initiation of the ever-normal granary program for wheat in 1938 created a strong demand for storage space at country points. By 1940, with war in the offing, labor and sacks became more and more difficult to obtain. The war accelerated the shift in the Pacific Northwest from sack to bulk handling. By 1943, this area had built sufficient bulk space to handle all of a normal crop of wheat.

This shift to bulk handling caused many of the line houses to give up their holdings back in the country. Cooperative associations acquired large numbers of these local units in addition to those that they built themselves. The cooperatives in this area now are larger than in most other wheat producing areas. Many of them operate several local elevators—from 2 or 3 to as many as 13 or 14—in some cases with as much as 12 to 14 million bushels' total storage space. Compared to the spring wheat area, the line houses have not retained as much of the financing and management of the local houses that they have given up.

CALIFORNIA

Most of the grain in California is still handled in sacks, as it was in the early days. California is not changing over to bulk handling like the Pacific Northwest. California's crops are varied; wheat is not predominant. Barley, beans, rice, flax, and many other seed and feed crops are grown in the same areas, and it is easier to keep them separate in bags than in bulk. Moisture is a more troublesome storage problem in California than in the states to the north. Country elevators in California average considerably larger than in any other state in the Union—about 134,000 bushels.

THE CORN BELT

Country elevators in the Corn Belt are comparatively small, only about 30,000 bushels capacity. The bulk of the corn crop is stored, not in terminal elevators nor in country elevators, but back on the farm where it was grown. Corn is not usually in best condition for handling as shelled grain until it has dried out on the cob in cribs on farms during the winter and spring. In addition, most farmers like to hold on to their surplus corn until the next crop is well along and they are sure of having enough corn for feeding purposes from the new crop. Corn therefore flows to market in a fairly constant stream (the percentages of sales by farmers in each of the two peak months, November and December, is only 11.1, as shown above in footnote 2) and local elevator men sell it about as fast as it comes to market.

The oats crop in the Corn Belt averages about half the size of the corn crop. Oats come on the market heavily at harvest time, and some storage of oats is practiced by country elevators, particularly those owned or controlled by line houses. The percentage of line houses, however, is smaller in the Corn Belt than in almost any other area in the country. The bulk of the oats is stored in mills or other large houses at terminal or sub-terminal markets.

METHODS OF SELLING GRAIN

Two methods of selling the grain are available to elevator operators. One method is the consignment method. The grain is shipped to a commission merchant at a terminal market, who sells it on the cash grain part of the trading floor of the grain exchange at that city.

SELLING BY THE CONSIGNMENT METHOD

The commission charge is one and one half cents a bushel for wheat, one cent a bushel for corn (or 1 per cent of the price if it goes above a dollar a bushel) and one half a cent a bushel for oats. In return for this charge, the commission man sells the grain at the highest price he can get, deducts his commission, and remits the proceeds to the consignor.

Commission houses also perform other services. They permit country elevator men to draw against them for 80 per cent or more of the value of the grain consigned to them. They thus constitute a source of credit for the country elevators. In some cases they go as far as to advance money to the country elevator on open account, simply on the implied condition that all, or at least a major part, of that country elevator's grain be consigned to them.

SELLING "ON TRACK" AND "TO ARRIVE"

The "to arrive" and "on track" methods of selling grain correspond to direct selling of livestock.

"To arrive" sales are made on the basis of cards sent out by brokers or elevators or manufacturers. These cards name price offers (on the basis of the terminal or manufacturing market from which the cards are mailed) that hold good only until 9:15 the next morning after mailing, the grain to be delivered any time within 10 or 15 days, or sometimes longer. The price is the amount the terminal buyer pays on the arrival of the grain, so the local elevators must pay the freight to the terminal market.

After the price is settled and the deal is made, the country elevator man is not affected by subsequent changes in price when he is selling on either the "to arrive" or the "on track" basis. Suppose that he has accepted an "on track" bid of 70 cents a bushel for a carload of corn, and that by the time he delivers the grain, say in ten days, the price has fallen to 65 cents. That makes no difference; he still gets the original price of 70 cents a bushel. Similarly, if the price rises to 75 cents, he still gets only the original price of 70 cents a bushel.

GRAIN STORAGE PROBLEMS

Most of the grain that flows through commercial channels is shipped from the farm soon after harvest; but it is consumed in fairly constant quantities each month through the year. The excess grain coming to market at harvest time has to be held in storage somewhere along the line, and released later on through the year when receipts are light. This grain is held in storage for periods of time ranging from a day to several months—in some cases, for more than a year.

In the winter wheat area, particularly, the problem of keeping the stored grain in good condition assumes major proportions. "The use of the combined harvester-thresher has magnified the storage problem. With the binder or header method of harvesting, the wheat was usually dry enough at the time of threshing to keep in good condition. There is a strong desire to start the combine before the wheat is sufficiently dry to store safely and experience with rain and hail storms has in the past justified this early start. The damp wheat may result from harvesting before the grain has dried sufficiently after kernel development, or it may be caused by dew or rain. In wet years it is almost impossible to eliminate all of the damp wheat. Past experience in the Kansas wheat belt indicates that one year out of five may have enough excess rainfall to produce damp wheat in sufficient quantity to make a serious storage problem. In wet years the presence of green weeds in the fields adds to the problem.

"The extent of damage to wheat in farm storage is enormous, as shown by data secured from large wheat growers in Kansas. Replies received from 297 such growers indicate that 60 per cent of them had suffered damage to wheat in farm storage. The average amount of damaged wheat per farm was 1,000 bushels. These reports include the year 1928 in which a large amount of damage occurred. Much of the wheat which is damaged on the farm never reaches the terminal market.

"The number of cars received on the Kansas City market which graded '5' and 'sample' was about twice as great during the years 1927 and 1928 as in 1929, 1930, and 1931. The former years were wet and the latter dry during the harvest season. In about half the cases the grading down was because of damage due to too much moisture.

"The percentages of cars which would be classed as milling grades, 1, 2, and 3, were as follows:

Year	Percentage of cars grading 1, 2, and 3
1927	75.4
1928	77.9
1929	80.3
1930	87.2

"Thus the amount of wheat which would not class in these milling grades varies from one-eighth to one-fourth of the total. That is, in a bad year about one bushel in four, and in a good year about one bushel in eight is not suitable for milling into good flour."[8]

These statements were originally published 14 years ago. Current data show that they are equally true today. In fact, in wet years the percentage of milling grades arriving at the terminal markets is lower than it was then.

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[8] *The Quality of Wheat as Affected by Farm Storage*, Kans. Agr. Exp. Sta., Tech. Bul. 33, 1932.

FEDERAL STORAGE PROGRAMS HAVE INCREASED WAREHOUSING PROBLEMS

Before the federal government undertook stabilization operations in grain, storage problems were primarily intra-seasonal. The quantities of grain that were carried over from one year to another were comparatively small, averaging only about 100 million bushels in the case of wheat. But after the "ever-normal granary" programs were set in operation, the quantities of grain that were carried over in storage from one year to another in order to smooth out the effects of fluctuations in production from one year to another, grew to be larger than the quantities that had previously been carried over after harvest time for release during the rest of the marketing year.[9] The quantities of grain held in storage more than doubled, and the length of time for which these larger quantities were held increased several times over. As grain storage stocks approached closer to the limits of grain storage capacity, less and less desirable storage space had to be utilized, and storage problems increased in difficulty. During the past few years, therefore, the grain warehousing job has increased in difficulty as well as magnitude.

THE BUSINESS ASPECT OF GRAIN STORAGE

A grain warehouse is a bank for stored grain. A man who puts his money in the bank wants to be sure that he can get it out again when he needs it. A man who puts his grain in a warehouse wants the same assurance. He wants to be sure that he will get not only the same number of bushels of grain that he deposited, but also the same quality of grain. All dollars are alike, but not all grain is alike, and the same grain may deteriorate in storage if it is not properly cared for. The depositor wants the same grade as well as quantity of grain that he originally deposited.

Grain, however, is not like cotton. The bales of cotton that are brought in to a warehouse for storage are stacked away, and their identity is preserved. The owner can get the same bales back. But most of the grain in the United States is handled in bulk, and in nearly all cases its identity is not preserved. Very little of it is stored in special bins under special warehouse receipts which enable the owner to get the same grain back. Special binning costs too much and is too unhandy. Practically all of the wheat that is put into store is not kept in separate bins. It is run in together with other grain of the same kind, class, and grade. The depositor does not expect to get the same grain back, but only the same grade of grain. Ordinary grain storage contracts and warehouse receipts accordingly specify merely that the warehouseman must deliver grain of the same grade (or better) as that of the original grain.

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[9] The domestic commercial stocks of wheat in the United States in June, 1941, at the end of the marketing year were 222 million bushels; the 1930-39 average stocks at the seasonal peak (October) were 155 million.

Accordingly, local elevator operators, particularly in the spring wheat area, have long followed the "well established trade custom" of accepting farmers' grain for storage (ostensibly in the local elevator) and issuing storage tickets (local warehouse receipts) to the farmers against it, but then shipping the grain out to a terminal elevator or mill for storage or sale. In cases where the local elevator operator sold the "stored" grain, he often used the proceeds of sale to finance his business. The operator considered that the bond he carried was sufficient guarantee that the depositor's interests were not being jeopardized.[10]

Most farmers were aware that this practice was prevalent. It was obvious enough in many localities merely from the fact that an elevator might have storage tickets for 100,000 bushels or more outstanding at one time, while its total capacity might be only 30,000 bushels. But the original line elevators had handled grain that way (the understanding being that they merely shipped the grain from one of their country houses to one of their terminal market elevators) and no harm seemed to result from the practice in that case. Most farmers did not object when independent local elevators handled their grain much as the line elevators did. Perhaps they did not recognize the fundamental difference between the two cases: In the case of the line elevators, the ownership of the grain did not change when the grain moved from the country elevator to the terminal elevator, but in the case of the independent elevator, the ownership did change. The independent local elevator operator sold the grain, and either hedged his sale by a corresponding purchase of futures, or took a chance that the price of the grain would not rise by the time the farmer presented his storage ticket for redemption.

Neither of these practices is very good business. If the local warehouseman hedged the sale, several weeks or months later the farmer would present his storage ticket for redemption at the then going price; and since the cash price normally advances relative to the futures price by the amount of the carrying charge (storage charge) during the season, the warehouseman would be out by the extent of the narrowing of the spread between cash and futures prices. In many cases he did not charge the farmer storage; in effect, he paid it himself. This was the opposite of "earning the carrying charge" as practiced by some operators when they hedge grain that they have purchased and put in store, and profit by the narrowing of the carrying charge, minus their costs of storage.

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[10] *Forty-third and Forty-fourth Annual Report of the North Dakota Board of Railroad Commissioners, June 30, 1934,* pp. 24–26.

If the local warehouseman does not hedge, he is indeed likely to get into trouble; for on the average the price of grain rises several cents a bushel through the season. On the average, he will lose, and a substantial rise in any one year is likely to wipe him out completely. If he is not fully covered by bonds, his depositors lose also.

STATE GRAIN WAREHOUSE SUPERVISION

Several states have passed legislation intended to protect depositors and investors against losses of this sort. One obvious method of protecting depositors is to require warehousemen to carry a bond large enough to cover possible losses, and license only those who do so. Legislation of this character was passed in the spring wheat area even before the Dakota territory was admitted to statehood. In 1887, provision was made for licensing country grain warehouses and requiring them to carry a bond ranging from $2,000 to $5,000.

North Dakota passed warehouse legislation in 1917 that went further than the original territorial legislation of 1887. The attempt was made, not merely to cover losses after they had happened, but to prevent losses from happening in the first place. The North Dakota Uniform Warehouse Receipts Act in 1917 provided for uniform storage tickets to be used throughout the state, and specified that no commodity that is secured by a warehouse receipt shall be shipped out until the receipt is surrendered to the owner. Forty-five other states now have similar laws on their statute books.

There was great opposition to this law on the part of the grain trade. The funds provided for administering the Warehouse Act were so small that it was difficult for the Commission to enforce it. Even as late as 1933, the appropriation for the biennium was only $16,000. The actual number of warehouses in operation in the state was then, and is now, about 1,200. The warehouse supervisory staff consists of one head and two field assistants. This is obviously too small a staff to supervise 1,200 elevators adequately.

The prohibition against warehousemen shipping out grain without surrendering the warehouse receipt to the owner of the grain was reaffirmed in Rule 7 of the revised rules concerning grain warehouses, adopted by the Commission on June 10, 1936. This rule specified that the "Value of grain stocks on hand must equal outstanding storage liabilities at all times."[11] The problem of enforcing this rule, however, still has not been solved.

The Minnesota Warehouse Act requires elevator men to carry bonds equal to minimums prescribed according to elevator capacity. The Commissioner is authorized to require additional bonds as he sees fit. According to the Commissioner in 1943, the total bonds usually are in an amount equal to or in excess of the total value of the stored grain. The South Dakota law unequivocally requires full bond coverage.

This form of protection is not satisfactory. It does not protect the depositors as a group; it merely protects individual depositors by spreading the losses out; the operating costs of the bonding companies are added to the losses, so far as the group is concerned.

The cost of a $25,000 bond in Minnesota and South Dakota is $84.80, and the cost of a $50,000 bond is $128.80. With wheat worth about $1.20 per bushel, the cost of those bonds amounts to 0.41 and 0.31 cents, respectively, per bushel of capacity occupied by grain in store. Depositors in Minnesota and South Dakota lose that much, even though they believe that they are fully protected against losses.

This does not mean that bonding of any kind is undesirable, any more than it means that fire insurance of any kind is undesirable. What it does mean is that complete bond coverage of the full value of the grain, without an active inspection program to head off as many losses as possible before they occur, is an unnecessarily costly and wasteful system, just as fire insurance of the full value of a residence, without any city ordinance setting up certain electric wiring and other fire prevention standards enforced by inspection, would be unnecessarily costly and wasteful.

A further shortcoming of a full coverage bonding system without adequate supervision of warehousing practices is this: Not only do depositors still bear the financial losses that result from improper warehouse practices, plus the costs of spreading them out, but the real loss continues unabated. The nation loses the food that is lost when stored grain goes out of condition. From the national point of view, the only satisfactory form of protection to depositors is not that which covers their financial losses after the losses have occurred, but that which prevents losses from occurring in the first place.

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[11] *Laws and Rules Governing Elevators and Grain Warehouses,* adopted June 10, 193C, and effective August 1, 1936. North Dakota Board of Railroad Commissioners

SUMMARY OF STATE SUPERVISION

The warehousing situation in the three spring wheat states reported above is indicative of the situation in the other states. One or two of the other states do as well as or better than the three spring wheat states, but most of them do not do so well.

Perusal of the annual reports for the different states shows that in most cases the supervisory staff that administers the law is very small, with only one or a few field men to handle up to more than a thousand elevators. In many states the warehouse supervisory staff consists of only one man, who merely checks the records in the elevator office, but never goes near the actual grain to check on its quantity and quality.

The reports also show that the turnover of the staff in many cases is very high. Under these conditions too much should not be expected in the way of adequate supervision of grain storing practices by state agencies. Local elevator supervision by state agencies in fact is inadequate.

TERMINAL GRAIN MARKET SUPERVISION

At the terminal markets, Boards of Trade and other agencies exercise some supervision over grain warehousing practices. This supervision has not prevented malpractices, and serious losses have occurred. "The history of attempts of the Chicago Board of Trade to regulate the activities of public elevator operators are matters of public record,* and may be regarded as indicating the limitations on self regulation likely to be met by any exchange attempting to control the warehouse situation broadly in the interests of the entire membership, or of the public."[12]

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* *History of the Board of Trade of Chicago,* by Charles H. Taylor (3 volumes).

In 1906, McReynolds and Co., an important private elevator operator in Chicago, failed, having borrowed money on private warehouse receipts amounting to 2,206,000 bushels, when the capacity of the elevator was only 1,500,000 bushels and the quantity of grain actually in store at the date of the failure was only 6,400 bushels. "This brought discredit on all warehouse receipts, public as well as private, and it led to the refusal of the banks to lend money on private receipts unless they were given more protection."[13] Legislation passed in 1907 to correct this condition, however, was quite inadequate, and the Custodian Department set up by the Chicago Board of Trade after 1911 to handle private warehouse receipts was only partially effective.[14]

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[12] *Report on Agricultural Income Inquiry,* U. S. Federal Trade Commission, Part I, *Principal Farm Products,* 1938, p. 361. See also Charles Fritz and Blair Stewart, *The Public Elevator Situation in Chicago* (mimeo.), Grain Futures Administration, USDA, October, 1932.

The "Grain Marketing Company Scandal" in 1924–27, involving losses of $2,700,000, and the "Rye Screenings Scandal"[15] during the same period, wherein the directors of the Chicago Board of Trade exonerated the principals in spite of a factual report condemning them, aroused great public resentment and led to a demand for state legislation to regulate warehousing practices more adequately. The Chicago Board of Trade drew up a plan for setting up a Board of Trade Warehouse Corporation, and this plan was embodied in the Illinois Warehouse Act of 1927. The Illinois Commerce Commission refused to permit the Corporation to become established, however, and in 1936 the Act of 1927 was amended, and some sections repealed.

"The net result of the failure of the Board of Trade Warehouse Corporation plan and the subsequent modification of the Illinois Act of 1927 is to leave the entire public elevator situation in Chicago just about where it was for 50 years prior to 1927.

RULES AND REGULATIONS IN CHICAGO AND OTHER TERMINAL MARKETS

"In all terminal markets the exchanges have developed more or less detailed rules and regulations covering the operation of public elevators made regular for delivery of futures. Only in the state of Illinois, however, does the state law provide definite restrictions upon ownership by the elevator operator of grain in public storage.

"Both in Chicago and in other terminal markets as well, monopolization of the elevator situation has been the occasion for continued complaints for many years, but no exchange has yet been able by itself to develop rules or regulations adequate to cope with the situation in a satisfactory manner."[16]

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[13] B. F. Goldstein, *Marketing; a Farmer's Problem,* Macmillan, 1928, p. 211.

[14] *Ibid.,* p. 212-15.

[15] *Ibid.,* p. 240-50.

[16] *Report on Agricultural Income Inquiry,* U. S. Federal Trade Commission. Part I, *Principal Farm Products, 1933,* pp. 365-66.

FEDERAL SUPERVISION UNDER THE UNITED STATES WAREHOUSE ACT

The United States Warehouse Act (referred to hereafter as the USWA) was passed on August 16, 1916. It was designed to create a uniform system of warehousing farm products, providing warehouse receipts of high and uniform quality that would facilitate financing farm products in storage and reduce marketing costs.

Within a few days after World War I began, the cotton exchanges at Liverpool, New York, and New Orleans all closed. Thus there was practically no organized market for cotton, and prices threatened to collapse. Accordingly, the USDA drafted an Act which would strengthen warehouse receipts for cotton and improve their standing as collateral for loans so that the owners of cotton in approved warehouses could get loans on their cotton and hold it for a better market. The Act as first drafted applied only to cotton, but by the time it was passed it covered grain, wool, and tobacco as well.

The Act is not mandatory. It does not put the federal government into the warehousing business. It merely provides for federal supervision of warehousing practices, on a voluntary basis. It permits the warehouseman storing certain agricultural products to apply for a federal license, and provides that this license will be issued if the warehouseman and the warehouse both meet the standards specified in the Act. Federal supervision ensures thereafter that the warehouseman will follow sound warehousing practices. The warehouse receipts that he issues state on the face that the warehouse is licensed and bonded under the United States Warehouse Act. This gives assurance to the owner of the goods and to a banker who may loan money on the receipts as collateral that the goods in the warehouse are being properly cared for.

Two provisions of the USWA and its regulations are crucial:

(1) "Sec. 17 . . . no receipts shall be issued except for agricultural products actually stored in the warehouse at the time of the issuance thereof."

That is, a warehouseman shall not issue a receipt of goods until those goods are actually in the warehouse.

(2) "Regulation 4. Sec. 7, approved May 9, 1931. Except as permitted by law or by these regulations a warehouseman shall not deliver grain for which he has issued a negotiable receipt until the receipt has been returned to him and canceled, and shall not deliver grain for which he has issued a non-negotiable receipt until such receipt has been re-

> turned to him or he has obtained from the person lawfully entitled to such delivery, or his authorized agent, a written order therefor. Before delivery is made of the last portion of a lot of grain covered by a non-negotiable receipt, the receipt itself shall be surrendered."

That is, grain shall not be delivered from storage until the receipt is actually surrendered to the warehouseman.

These two provisions would appear on the face of it to be elementary minimum essentials for the straight-forward operation of any warehouse. Yet, as described in preceding sections, local elevators in the spring wheat area particularly have for years accepted grain for storage, issued storage tickets (warehouse receipts) against it, but then have proceeded to ship the grain out almost immediately for storage or sale at the terminal market, while the original storage tickets were still outstanding. The object of Regulation 4 was to prohibit this practice and protect grain depositors from the losses that sometimes resulted from it.

The first license under the USWA was issued on October 28, 1919. Thereafter the number of licenses increased rapidly, and 14 of the most important farm products were made eligible for storage under the Act. On March 8, 1946, the total number of grain warehouses licensed under the Act was 744, with a capacity of 266,308,854 bushels, and the average capacity per house was 350,000 bushels.

COST OF FEDERAL WAREHOUSE LICENSING AND SUPERVISION

The fee for a federal license is $10. This is not an annual fee; it is paid only when the license is first taken out. It licenses the warehouseman. The fee for the license for each "inspector and/or weigher" (that is, helper) is $3.

The federal supervisors make their inspections at unannounced dates, a minimum of three times per year (formerly four times). The inspection includes a complete inspection of all the grain in the elevator. The inspectors measure all the bins in the elevator and compute the number of bushels in the bins. They then sample the grain in all bins for grade and condition. The inspectors also make a complete check of all warehouse receipts issued and outstanding, of the insurance in force, and of the physical condition of the plant since the last inspection.

The supervisory service is free. The only cost to the warehouseman is the original cost of the license, unless the warehouseman asks for an inspection, in which case the charge is $2 per 10,000 bushels of grain storage capacity, but in no case less than $10 nor more than $200.

Regulation 3, Section 2, Paragraph 1 under the Act provides that the warehouseman shall carry a bond "at the rate of 5 cents per bushel of the maximum number of bushels that the warehouse will accommodate when stored in the manner customary to the warehouse for which such bond is required, as determined by the chief of the bureau, but not less than $5,000 nor more than $50,000."

These things add up to the conclusion that the total cost to the warehouseman of federal supervision is a very nominal amount—in the case of most country elevators, only between $25 and $50, and in the case of larger houses, less than these amounts in proportion to size.

The administrators of the USWA estimate that the annual cost of administering the grain warehouse section is about $150,000.

The total grain storage capacity licensed and supervised under the USWA is about 266 million bushels. Federal supervision, therefore, costs the nation about 6/100 of one cent per bushel of capacity, per year. Thus the cost to the warehouseman is purely nominal, and cost to the nation is also small.

The USWA evidently provides effective protection against financial losses at a very low cost, as has been shown since federal warehouse supervision was instituted in 1916. Nearly two billion dollars worth of products is now handled annually through federally-licensed warehouses. So far as is known, no depositor in a warehouse federally-licensed has ever suffered any loss, and the total losses paid by bonding companies have not exceeded $60,000.

SHORTCOMINGS OF FEDERAL SUPERVISION

There are, however, several shortcomings of the way the USWA has worked out in practice. (1) The use of the federal warehouse license and inspection service is voluntary, and participation has been small. Federal warehouse licenses at present cover only 3.4 per cent of the total number of grain warehouses. (2) The coverage is geographically spotty. There is a considerable concentration in number of warehouses in certain areas, such as Nebraska, and in capacity, such as in Illinois; but there are large gaps in other areas, for instance in the spring wheat area. (3) The average capacity of the elevators under federal license, 350,000 bushels, is almost five times as large as the average for all grain warehouses in the country (about 73,000). Federal licenses have been taken out chiefly by the large operators. About 70 per cent of the capacity over 500,000 bushels per unit has come under federal license. Most of the capacity of the federally-licensed houses is located at terminal or sub-terminal markets.

The voluntary nature of the service has another undesirable result. Warehousemen who want to engage in warehousing practices that are generally regarded as improper will not of course apply for licenses under the Act. The USWA, therefore, cannot improve those warehousemen's operations. Furthermore, when any one of the warehousemen who are licensed under the Act infringes its regulations in some minor way, the administrators of the Act face a difficult problem. If they suspend or cancel his license because of the infraction, that forces him out of the system. He is then free to continue his objectionable practice, and in addition is free to do many other things which he probably would not try to do if he had remained under license. The cancelation of his license protects the reputation of the USWA, but it does not do anything to improve the practices of that particular warehouseman. It may in fact make them worse.

Thus, over a period of years, warehousemen who engage in objectionable practices either do not come under the Act, or are forced out of it after they have come under it. This means that there is a very good group of warehousemen under the Act. They have an excellent reputation. The level of their performance is steadily being raised. But nothing is being accomplished in raising the standards of the houses outside the system. The USWA helps to raise the standards of the best houses still higher, but it is unable to do anything to raise the standards of the rest who need it most. Only "them as has, gits."

FEDERAL SUPERVISION UNDER THE COMMODITY CREDIT CORPORATION

The advent of the CCC stabilization programs in 1933 brought an important new element into the grain storage situation.

By 1942 the CCC had become by all odds the largest owner of grain in the United States. On July 1, 1942, at the end of the marketing year (a time when storage holdings are usually at their lowest level), the CCC owned or had under loan 424 million bushels of wheat—more than half of an average wheat crop. Three months later, on September 30, it had 263 million bushels under loan, and owned 309 million bushels more—a total of 572 million bushels, more than the United States human consumption for an average year.

The CCC, as the caretaker of one-half or two-thirds of the wheat crop, has a direct responsibility for the preservation of the quantity and quality of the grain that it holds in store. This responsibility is two-fold. An ordinary private grain owner is interested in the physical grain only to the extent that it affects his dollar position. It makes no difference to him if the grain deteriorates or disappears completely, so long as the warehouseman makes good on a dollar basis. But the CCC, being part of the federal government that represents the people as a whole, is interested in the preservation of the physical grain as well as in the protection of its dollar position. A dollar loss can be covered by a bond, but the loss of the physical grain is a loss to the nation that cannot be thus covered. Protection against a dollar loss is the immediate concern of the CCC administrator, but it is only a superficial concern. The primary responsibility of the CCC is to prevent losses from occurring in the first place.

The CCC would have preferred to require from the first that all farm products under loan or owned by the CCC should be stored only in warehouses licensed under the USWA. But when the CCC started operations, less than 16 per cent of the grain warehouse capacity in the United States was under federal license, about the same as the figure today. It was impossible, therefore, to require that all warehousemen storing CCC grain be federally licensed. The appropriations for administering the USWA were not large enough to permit any considerable expansion in its activities, and even if the appropriation had been greatly expanded there was not enough time to train additional supervisory staff before the flood of CCC grain would start to move into storage.

Neither was it possible (or in this case desirable) for the CCC to require that the warehousemen storing CCC grain be licensed by state licensing agencies, if they were not licensed under the USWA. Only in a few states was the inspection that accompanied the state license at all adequate. In many states, the licenses were issued with little or no inspection, and some states had no warehouse law at all. The CCC, therefore, had to provide its own inspection.

The Uniform Storage Agreement used by the CCC provides, as the USWA does, that the elevator man shall not ship out grain covered by warehouse receipts until the warehouse receipt is canceled. But in most cases it is almost impossible for the CCC to enforce this provision. The CCC is only one depositor of grain, and it is responsible only for its own grain. It can supervise the warehouse only to the extent that its own grain is involved. This creates difficulties.

for grain is fungible and very little is special binned. When CCC grain is put into storage, its identity is lost. Then what is the CCC's "own grain"? The Uniform Storage Agreement calls only for grain "of the same class, grade, and quality described in the warehouse receipts" (except in the case of corn, very little of which is stored in elevators).

Consider for example an elevator with warehouse receipts outstanding for 100,000 bushels of wheat, the CCC holding 40,000 bushels, and other interests 60,000. The CCC inspector arrives, and finds that 20,000 bushels of the wheat in the elevator is in various stages of deterioration. Is it CCC grain? The warehouseman may take the attitude that it is not, and therefore that the CCC inspector has nothing to do with it. What is the inspector going to do? If he orders his 40,000 bushels out immediately, he may be accused of acting arbitrarily and without good reason. If he does nothing, the warehouseman may be able to work off the poor grain on other depositors; or he may not, and the CCC may be left holding the sack. The situation is unbusinesslike and unsatisfactory.

WAREHOUSING REGULATIONS IN THE AGRICULTURAL ADJUSTMENT ACT

The Federal Congress has attempted to promote good warehousing practices still further by passing additional legislation in 1933 and adding more since that time. It included some provisions concerning warehousing practices in the Agricultural Adjustment Act of 1933, and later (in 1940) made an amendment to the Agricultural Adjustment Act of 1938, concerning warehousing practices.

The original Agricultural Adjustment Act of May 12, 1933, included a section concerning warehousing practices which closely paralleled Regulation 4, Section 7, approved May 9, 1931, of the Federal Warehouse Act, quoted earlier in this chapter. It said:

"No person operating a public warehouse for the storage of any basic agricultural commodity in the current of interstate or foreign commerce shall deliver any such commodity upon which a warehouse receipt has been issued and is outstanding without prior surrender and cancellation of such warehouse receipt. Any person violating any of the provisions of this sub-section shall, upon conviction, be punished by a fine of not more than $5,000, or by imprisonment for not more than two years, or both."[17]

This section of the law was never enforced. The grain trade became concerned about it, however, and a few years later an amendment was passed and approved on October 8, 1940. This amendment left the original wording unchanged, but added the following exception:

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[17] *The Agricultural Adjustment Act*, Public No. 10—73rd Congress, H. R. 3835, Title 1, Section 8 (4).

" . . . any person operating a country public grain warehouse or warehouses may, because of lack of sufficient space to accommodate all depositors, move storage grain out of such warehouse or warehouses to another warehouse for continuous storage, under such regulations as the Secretary of Agriculture may prescribe. A non-negotiable warehouse receipt shall be issued by the warehouseman to whom the grain was shipped, and said receiving warehouseman shall give such guaranty and shall store such grain under such regulations as the Secretary of Agriculture may prescribe to assure delivery to the rightful owner of such grain in the amount, and of the kind, quality, and grade called for by his receipts. Any warehouseman who intends to ship grain while his original receipt is outstanding must recite in his receipt both the name and address of his warehouse as well as that of the warehouse to which the grain may be shipped for further storage. All grain shipped under this section must be shipped under a non-negotiable bill of lading. . . .

"This Act shall not be construed as amending or changing in any manner the United States Warehouse Act of August 11, 1916, as amended."

The regulations referred to in this amendment, however, have not been issued, and the matter has rested at a stalemate since.

Where does this leave the country elevator man? Does the 1940 amendment permit him now to move storage grain out of his local elevator to a terminal market and store it there under a non-negotiable receipt, or does the original 1933 statute still forbid him to do this?

This is a nice legal question, and there is division of opinion on it. One view is that the amendment supersedes the original statute; the other is that the regulations prescribed in the amendment have not been issued, and that the amendment cannot be regarded as in force until they are. This legal tangle urgently needs clearing up.

APPRAISAL OF GRAIN STORAGE SUPERVISION AS A WHOLE

The supervision of grain warehouses that exists today evidently falls far short of achieving its end. Grain warehouse supervision in the United States has grown up from several different and independent sources; it is heterogeneous and unorganized. In addition to the grain trade itself, three or four independent and frequently overlapping supervisory agencies—the State Warehouse Commissions in the states, the federal government under the United States Warehouse Act, the Commodity Credit Corporation, and, on the statute books, at least, the AAA—are trying to do the same job, using different procedures and specifying different standards of warehouse operation. Each agency has its own limitations. And all of them put together are not getting the job done.

The supervision provided by the different state warehouse commissions ranges all the way from very good in one or two states to none at all in one or two others. Some of the states believe that they are providing adequate protection to their grain depositors by means of their state warehouse laws, and that no other protection is needed. This, however, clearly is not true. The level of protection in even the few best states is still not high enough to satisfy the depositor who owns or has loans on the majority of the food grain in the country—the CCC. The CCC has found it necessary to do its own supervising with its own staff, investigating the physical and financial condition of all the elevators where its grain is stored and inspecting its grain in these elevators as fully as its staff would permit, even in the states where the state supervision is conducted on the highest levels attained by any state in the Union. This duplicates the supervisory work that the states are doing or trying to do, yet neither the CCC nor the state is able to do a complete job.

Even if the level of protection in the best states were high enough to satisfy all depositors, and the cost of the protection were satisfactorily low, the problem of raising the level in the lower states would require solution. Private and state action has not provided a satisfactory level of protection up to the present time. It is difficult to see how the level could be raised in the future except by federal action. Yet the two different federal laws dealing with warehousing practices—the United States Warehouse Act and the Agricultural Adjustment Act of 1938 as amended in 1940—plus the warehousing provisions in the Uniform Grain Storage Agreement of the Commodity Credit Corporation, have not been effective in getting the job done.

Federal warehouse supervision under the USWA gives excellent protection to depositors, but it covers only 3.5 per cent of the number of grain warehouses and only 15.6 per cent of the grain warehouse capacity, concentrated mainly in the larger markets. The CCC supervises its own grain in storage, and the grain of the

Federal Crop Insurance Corporation, but has no responsibility for the rest. The county AAA authorities are also involved because of their certification of grades. Finally, the Agricultural Adjustment Acts of 1933 and 1938, as amended in 1940, laid down certain elementary specifications for grain warehousing practices; but no attempt has ever been made to enforce them; that part of the act has remained a dead letter.

ONE SINGLE AGENCY SHOULD SUPERVISE GRAIN ELEVATORS

Action on a federal scale appears to be required. It needs to be unified federal action, not the existing mixture of voluntary supervision of only part of the warehouses, under the USWA, and compulsory supervision of only part of the grain, under the CCC.

The elevators where CCC grain is stored are subject to CCC supervision. This supervision is inadequate from a national point of view, because it covers only the CCC's own grain; many elevators do not store grain for the CCC the year around, and some do not store grain for the CCC at all. The CCC supervision cannot legally be extended to cover all grain in all warehouses, for all elevators do not store CCC grain. And there is some question in any case whether, as the owner of the grain, the CCC is the best agency to supervise its storage.

The USWA supervision is good so far as it goes, as shown by the extremely small amount of losses (all covered by bonds) that have occurred under it. The CCC accepts USWA supervision as satisfactory without any further supervision of its own. The big shortcoming of the USWA is that it does not go far enough. Licensing under the Act is voluntary, and only 15.6 per cent of the total grain storage capacity in the United States has come under license. Warehousing supervision is not likely to improve over its present patchwork condition while licensing and inspection under the USWA remains voluntary. The question then arises: Is it not necessary to extend the USWA to cover warehouses and warehousing practices over the nation, on a mandatory instead of voluntary basis?

FULL DISCUSSION NEEDED

This is not an easy question to answer. On the face of it, one would be inclined to answer yes. But the great practical difficulty in the case of grain is that very few warehouse operators run their facilities solely or primarily as public warehousemen. Grain warehousing, generally speaking, is performed by men whose first and primary business is not warehousing but grain merchandising. Warehousing is only an incidental part of grain handling and merchandising.

The country elevator man, for example, who stores for the producers in his area does so with an eye to the merchandising possibilities in the grain received at his elevator. If a farmer desires to store his crop, the local dealer will accommodate him, but the transaction is regarded primarily as a deferred opportunity to purchase and merchandise the crop. For this reason, storage and handling charges in many sections of the country are less than the actual cost of rendering the service. For this reason, also, the local dealer is likely not to handle grain strictly according to warehousing principles.

Suppose, for example, that the dealer has a stock of high grade wheat occupying almost all of the space in the elevator; part of it is his own grain and part belongs to his depositors. A customer delivers a load of lower grade wheat, No. 4 or No. 5, for storage, for which the dealer gives him a warehouse receipt. This load of wheat is very likely to be mixed into the first shipment from the elevator in such proportion that the wheat loaded will not grade below No. 2. An equivalent amount of high grade wheat is retained in the elevator. When the depositor wishes to wind up his storage contract he will be paid the current market price for the grade called for by his warehouse receipt, less storage and handling charges. The actual wheat may have been gone for months, although in a sense its absence was "covered" by an equivalent amount of wheat of a better grade and consequently of higher monetary value.

This transaction is not "warehousing" in the sense that warehousing is the business of receiving, protecting, and eventually delivering goods to a depositor or to his order. No warehouseman is supposed to commingle or substitute goods in this manner. The practice has no standing in law; yet grain elevator men, because of their primary role as dealers, frequently indulge in this and similar practices. Probably a large part of the opposition to federal supervision is based on the belief among warehousemen that some of their liberties of this sort in handling grain will be taken away.

Because of these and other complications in the grain business, the proposal to extend the USWA to cover all warehouses on a mandatory basis would require extended preliminary discussion among the trade and the government as to ways and means by which it could be put into effect.

THE COST OF ADMINISTERING A MANDATORY WAREHOUSE ACT

If the United States Warehouse Act were made mandatory, what would be the cost of administering it? And how could this cost be defrayed?

It is estimated that the cost of administering a mandatory United States Warehouse Act for grain would be about $600,000 a year—about four times the cost of administering the grain part of the present voluntary Act.

The principle has been established with inspection and grading services for meat and grain that the commodity bear most of the expenses of these services. This principle seems applicable to grain warehouse supervision. Otherwise the service, and the money expended in providing it, become subsidies to the commodity. It would seem desirable to continue federal appropriations on about their present levels, in order to cover overhead administrative expenses, but to charge the other costs of about $450,000 to the grain warehousemen in the form of an annual license fee based upon capacity. In some cases, this cost would be less, rather than more, than the costs of the present inadequate supervision, and in many cases the net addition to costs would be small.

REVISION OF THE USWA

If the USWA were made mandatory, some changes in its provisions and regulations would seem to be desirable.

The USWA and its regulations originally were adapted to prevailing trade practices as far as it was thought possible to go without impairing the fundamental principles of good warehousing. It appears that this adaptation could safely be carried further by regularizing certain trade practices that are at present prohibited. Two or three specific changes are suggested:

(1) The practice of shipping out grain in store at a local or sub-terminal warehouse whenever there is not enough room to store it where it is received should be permitted, provided either (a) that such grain is kept covered by a non-negotiable warehouse receipt issued by the terminal operator to the local operator or to a government employee who would serve as custodian of the receipts, or (b) that a terminal warehouse receipt for the grain is issued direct (through the local elevator operator) in the first place. This would eliminate the objectionable feature of the present practice—the selling of the grain by the local warehouseman without authorization by

the original receipt holder—but permit grain to be stored where space was available. There would then be two warehouse receipts outstanding against one lot of grain, but only one of the receipts would be negotiable. Only one could be used as collateral for a loan.

The modification suggested under 1-a is already embodied in a 1940 amendment to the Agricultural Adjustment Act of 1933, as amended in 1940. This amendment, however, has remained a dead letter.

(2) Another modification would relax the present regulation (Section 16) that prohibits federal licensees from mixing of grain of different grades, by permitting such mixing upon request of the depositor and prior cancellation of the warehouse receipts covering the original grain. An amendment of this sort was offered in 1939, but was not enacted into law. The USDA solicitor has ruled that the present Act permits the mixing of different grades of grain upon request of the depositor and prior cancellation of the receipts, in spite of the language of Section 16. It would be better to have the permission spelled out in the Act itself.

(3) Adaptation to another practice—accepting wheat for storage which would not remain in condition in the local elevator, shipping it out to a terminal elevator for conditioning or sale, and covering it by a receipt for grain of higher grade that is kept in store—could be accomplished by permitting warehousemen to keep grain on hand equal in grade to the grade specified in the receipt, *or higher than that grade.* This can be done under the present Act, but only after a definite understanding has been made with the farmer, and the elevator man has an equal or greater quantity of grain of better grade in the elevator belonging to himself and with no warehouse receipts already out against it.

The universal nation-wide mandatory application of a warehouse act revised along the lines suggested would put all operators on the same competitive basis and enable them to accept such wheat only for what it was worth, and handle the receipts for it as they should be handled, without fear that non-licensed warehousemen would outbid them as they can at present. It also would ensure maximum protection to depositors and reduction of losses, at the lowest possible cost.

CHAPTER 17.

Reducing Livestock Marketing Costs

Under peace time conditions, the number of each of the three major kinds of meat animals on farms in the United States usually falls within a range from 50 to 75 million head. On January 1, 1940, the number of cattle and calves was 69 million head; of hogs, 58 million; and of sheep and lambs, 54 million.

More pork (excluding lard) is produced and consumed in the United States than any other meat. Hogs are heavy grain-consuming animals. Accordingly, they are produced mostly in the eastern half of the United States—east of the 100th meridian—in the area that is best suited to feed crop production. This is shown in Figure 43. The figure also shows that within the eastern half of the United States, hog production is heavily concentrated in the Corn Belt, where the supplies of feed are the greatest.

Beef cattle and sheep are primarily range and hay-consuming animals. Their production therefore is spread more evenly over

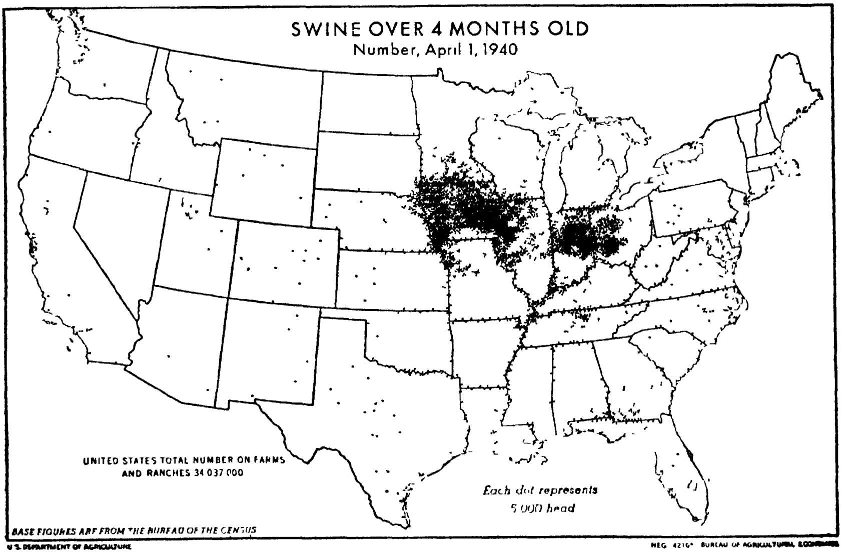
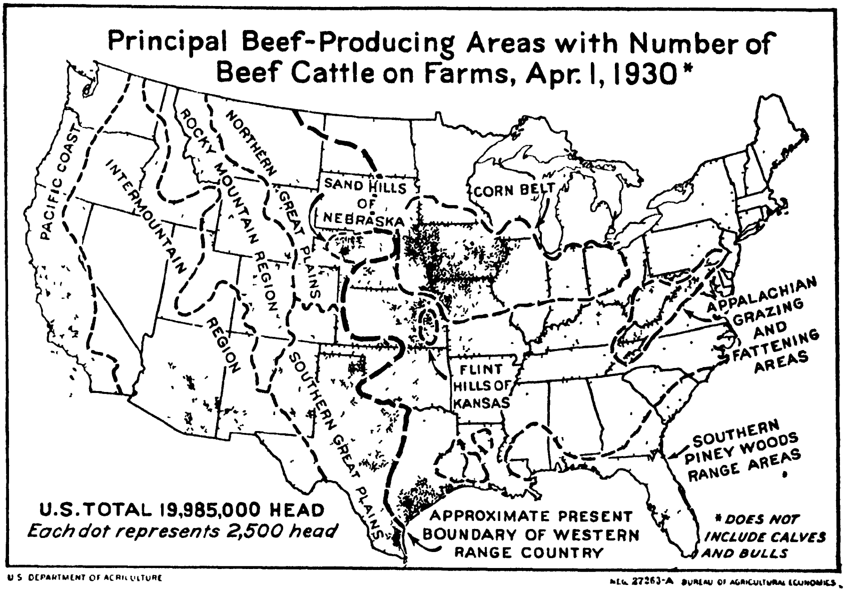

SWINE OVER 4 MONTHS OLD
Number, April 1, 1940
UNITED STATES TOTAL NUMBER ON FARMS AND RANCHES 34 037 000
Each dot represents 5 000 head
BASE FIGURES ARE FROM THE BUREAU OF THE CENSUS
U S DEPARTMENT OF AGRICULTURE
NEG. 4210* BUREAU OF AGRICULTURAL ECONOMICS

Fig. 43.—Swine production areas in the United States.

the United States than in the case of hogs, as shown in Figures 44 and 45. Over 40 per cent of all beef cattle are located west of the 100th meridian. About two-thirds of the cattle shipped from the western grazing areas each year are sold for immediate slaughter; the remaining one-third are shipped into the Corn Belt and other states to be finished (fattened) for slaughter.


Principal Beef-Producing Areas with Number of Beef Cattle on Farms, Apr. 1, 1930*
PACIFIC COAST
INTERMOUNTAIN REGION
ROCKY MOUNTAIN REGION
NORTHERN GREAT PLAINS
SAND HILLS OF NEBRASKA
CORN BELT
SOUTHERN GREAT PLAINS
FLINT HILLS OF KANSAS
APPALACHIAN GRAZING AND FATTENING AREAS
SOUTHERN PINEY WOODS RANGE AREAS
U.S. TOTAL 19,985,000 HEAD
Each dot represents 2,500 head
APPROXIMATE PRESENT BOUNDARY OF WESTERN RANGE COUNTRY
* DOES NOT INCLUDE CALVES AND BULLS

U S DEPARTMENT OF AGRICULTURE NEG. 27263-A BUREAU OF AGRICULTURAL ECONOMICS

FIG. 44.—Beef cattle production areas in the United States.

VARIED LIVESTOCK MARKETS

The markets for livestock are more varied than the markets for grain. Most grain either moves short distances by truck direct from farm to farm, or is loaded into local elevators for shipment by rail to mills that are usually located some distance away. But livestock is sold through half a dozen different kinds of markets, and sometimes through two or three of them in series. These different kinds of markets each have their own characteristics; they require separate discussion for each kind of market.

The Bureau of Agricultural Economics at Washington publishes livestock market statistics—receipts, slaughter, prices, etc.—covering the most important markets in the United States.[1] No compre-

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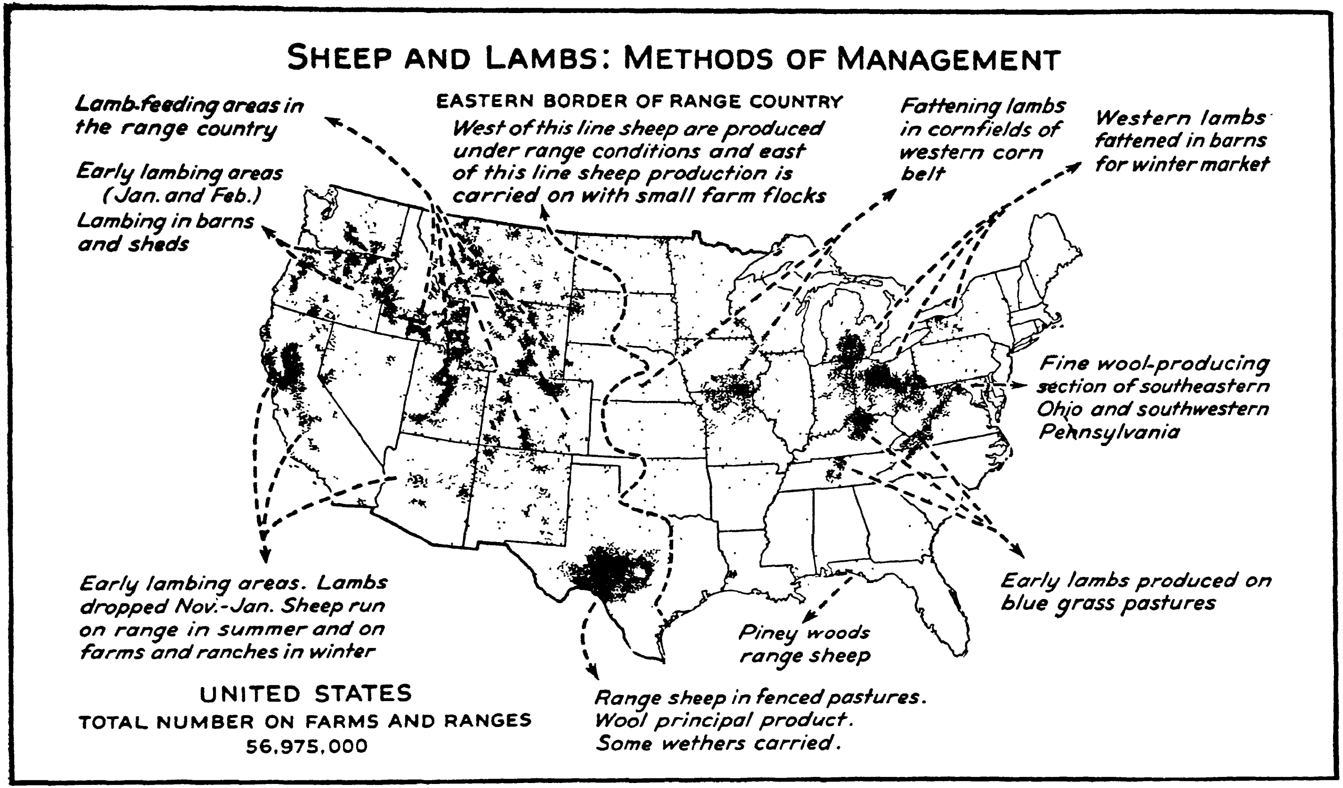
[1] Its daily, weekly, and monthly reports are described in Chapter 6. The BAE also publishes an annual statistical summary entitled, *Livestock, Meats, and Wool Market Statistics and Related Data.*


SHEEP AND LAMBS: METHODS OF MANAGEMENT
Lamb-feeding areas in the range country
Early lambing areas (Jan. and Feb.) Lambing in barns and sheds
EASTERN BORDER OF RANGE COUNTRY
West of this line sheep are produced under range conditions and east of this line sheep production is carried on with small farm flocks
Fattening lambs in cornfields of western corn belt
Western lambs fattened in barns for winter market
Fine wool-producing section of southeastern Ohio and southwestern Pennsylvania
Early lambs produced on blue grass pastures
Piney woods range sheep
Range sheep in fenced pastures. Wool principal product. Some wethers carried.
Early lambing areas. Lambs dropped Nov.-Jan. Sheep run on range in summer and on farms and ranches in winter
UNITED STATES
TOTAL NUMBER ON FARMS AND RANGES
56,975,000

U.S. DEPARTMENT OF AGRICULTURE NEG. 20139 BUREAU OF AGRICULTURAL ECONOMICS

FIG. 45.—Sheep and lamb production areas in the United States.

hensive study of livestock marketing practices in the United States as a whole, however, has ever been made. Some state and regional studies are available. The most recent regional study of livestock marketing practices covers what is called the Cornbelt region—an area somewhat broader than the Corn Belt itself.[2] This region includes the 12 North Central States plus Kentucky and Oklahoma.

COUNTRY LIVESTOCK MARKETS

The western tier of states in this Cornbelt region sells a considerable percentage of its cattle and sheep as stockers and feeders, but most of the livestock in the rest of the region is sold for immediate slaughter.

Between one-half and two-thirds of the livestock sold by farmers in the Cornbelt region in 1940 were sold at local or country markets close at home. Figure 46 shows that farmers sold 56 per cent of their cattle and calves, 64 per cent of their hogs, and 55 per cent of their sheep and lambs at local or country markets. They consigned the rest of the livestock to commission men at terminal public markets who sold them to packers and other buyers there.

Local or country livestock markets are diverse in character. Half a dozen or more different kinds of local dealers buy livestock from farmers. In many cases several kinds of buyers operate in the same local market.

Figure 46 shows that among country markets the packing plant is the most important outlet for livestock. The next most important channel is the local or country dealer. Livestock auctions come next, followed by concentration yards, local cooperative shipping associations, and farmers and other miscellaneous buyers. These different outlets are discussed separately below.

PACKING PLANTS

Figure 46 shows that farmers in the Cornbelt region sold 20 per cent of their hogs direct to packers. This is nearly twice as high as the percentage of cattle and calves (11 per cent) thus sold. The percentage of sheep and lambs was 15.

This term "direct to packers" requires a word of explanation. The arguments about "the direct marketing of hogs," and the bulletins that have been written under that title, all use that term in a

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[2] *Marketing Livestock in the Corn Belt Region,* South Dakota State Coll. Bul. 365, Nov. 1942.

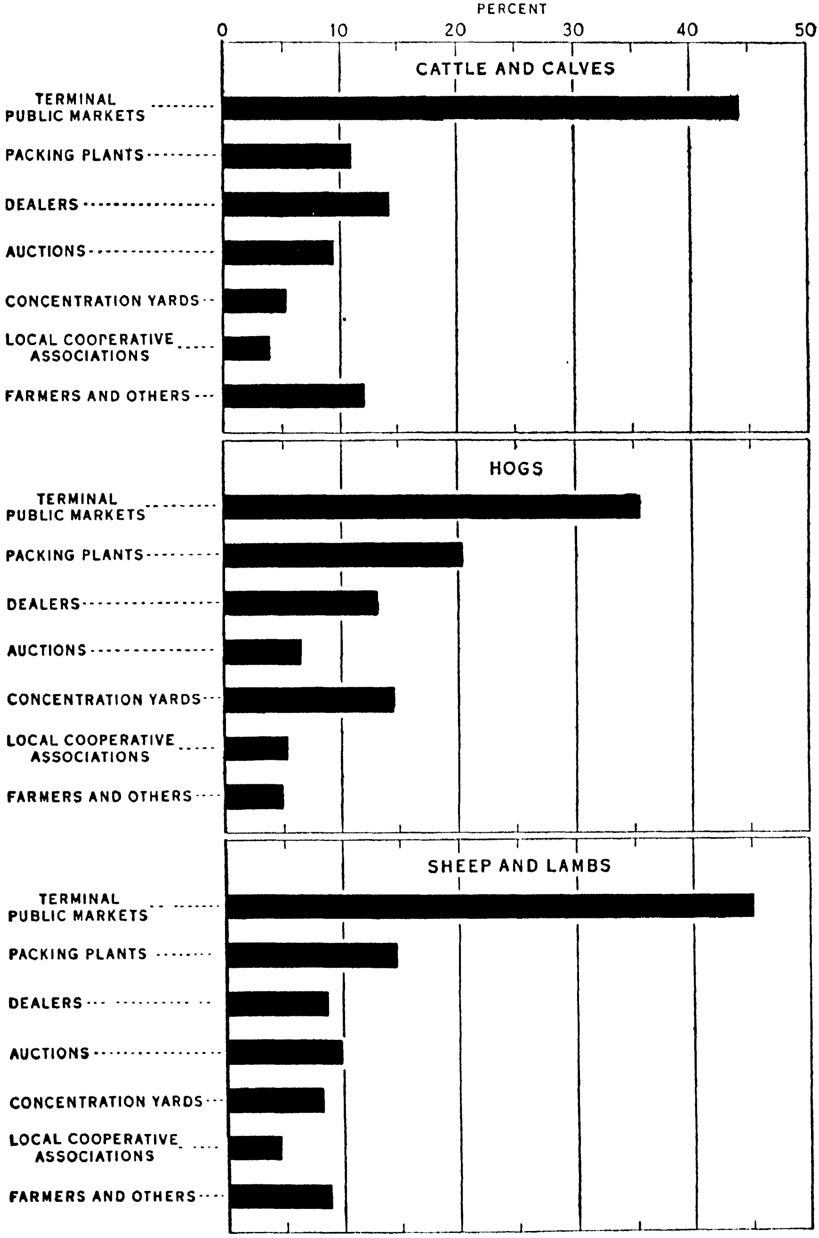

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FIG. 46.—Percentage of all livestock sold through various types of markets in the Cornbelt region, by species, 1940.

specialized and inaccurate sense. They refer to all hogs that are not sold through a commission man at a public market as "direct" sales. A load of hogs might go through several different hands before it reached the packer, but unless one of those hands belonged to a commission man, in the language of the trade that load of hogs would have been marketed direct.

In the present section, by contrast, the phrase "direct to packing plants" means just what it says—direct from farmer to packer, without any intermediary of any kind.

LOCAL OR COUNTRY DEALERS

Country dealers are independent traders who buy and sell livestock for a profit. They used to handle the major part of the livestock. Now they handle only 14 per cent of the cattle and calves, 13 per cent of the hogs, and 9 per cent of the sheep in the Cornbelt region.

Country dealers operate in various ways. They used to consign most of their livestock to commission men at the terminal markets. More recently, a considerable number sell direct to packers. Some of them get bids from one or more packers or concentration yards before they buy. This reduces their risks, and enables them to operate on a narrower margin. They also do a good deal of the buying and selling at auction markets.

The results of different studies made in one or two states at different times can be compared to show the changes that have taken place in the percentages of livestock going to local dealers over the years.

A study of local hog marketing practices in Iowa in 1933 showed that 48 per cent of the slaughter hogs sold in Iowa were disposed of to the local dealer or buyer.[3] By 1940, however, only 23.4 per cent of the hogs were sold to the local "dealer or truck buyer."[4] The percentage sold to or through local cooperative shipping associations (another sort of local dealer) also declined, from 11 per cent to 6.

The proportion of Iowa hogs sold at terminal public markets remained unchanged, from 1933 to 1940, at a little less than 20 per cent. The decline in sales to local dealers was offset by an increase in sales direct to packing plants (from 11 to 30.8 per cent) and to "concentration yards or local markets" (from 5.5 to 15 per cent).[5] Similar changes took place in Missouri, where sales to local dealers declined from 14 per cent[6] to 8. The chief reason for the decline in sales to local dealers apparently is the increase that has taken place in sales direct from farmers to packers. For the country as a whole, the percentages of livestock sold direct have more than doubled during the past 25 years,[7] as shown in Figure 10 of Chapter 4.

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[3] Geoffrey Shepherd and Norman V. Strand, *Local Hog Marketing Practices in Iowa*, Iowa Agr. Exp. Sta. Res. Bul. 262, 1939, p. 166.

[4] *Marketing Livestock in the Corn Belt Region*, South Dakota Agr. Exp. Sta. Bul. 365, 1942, p. 124.

It is interesting to note that in Canada, the use of the carcass basis of sale for hogs has practically eliminated the local dealer, or drover, as he is called in Canada. "The old time drover who purchased livestock outright from the farmer and sold it to the packer has been largely eliminated from livestock marketing in this country, in so far as hogs are concerned. Many of those who have not gone out of business have become cooperative shipping agents, or operate on a straight commission basis, although quite a number of cattle are still handled under the old system of outright sale at the farm."[8]

AUCTION MARKETS

An auction is a market at which goods are offered for sale simultaneously to several prospective buyers, and are sold to the buyer making the highest bid. A little less than 10 per cent of the livestock in the Cornbelt region were sold through auctions in 1940.

Livestock auctions have been used as the common method for selling livestock in England for centuries, but have developed only recently in the United States. Improvements in transportation and communication after World War I permitted easier assembly of livestock and livestock buyers at country points and enabled buyers and sellers to post themselves with more accurate market information than before. The auction market then afforded an outlet somewhat comparable with the terminal market in that it brought several buyers physically together in the same ring. It makes a relatively good market for small lots and for odd weights or grades of livestock.

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[5] Part of the apparent decline in sales to local dealers, and increase in sales to "concentration yards or local markets" could have resulted from some of the local dealers in the first study being classified under local markets in the second. It is difficult to know just where to draw the line between the two categories. But this could account at most for only 9 points of the 24.6 point decline in sales to the local dealer. It seems clear that from 1933 to 1940 the numbers of local hog dealers was cut almost in half.

[6] F. L. Thomsen and Earl B. Smith, *How Missouri Hogs Are Marketed,* Bul. 352, Univ. of Missouri, 1936, p. 5.

[7] Data from *Livestock, Meats, and Wool Market Statistics and Related Data 1944,* USDA ,September, 1945, p. 38.

[8] Letter from L. W. Pearsall, Assistant Director of Marketing Service, Dept. of Agr., Ottawa, Can., to the author, May 11, 1945.

The most common rate charged at these auctions is about 3 per cent of the selling price. This works out to be less than the rate at public markets for animals of low value and for small lots, but higher for animals of high value and for those sold in large lots. The reason for this is that commission rates at public markets are set on a per head basis, and decrease sharply as the number of head per lot increases.[9]

CONCENTRATION YARDS

Concentration yards operate at country points where livestock is assembled in large numbers. They are used mostly for hogs (taking 15 per cent of the total) to a smaller extent (8 per cent) for sheep, and still less (5 per cent) for cattle.

No clear distinction can be drawn between concentration yards and dealers who handle large volumes of livestock. Concentration yards were originally established for the purpose of assembling hogs for shipment to packers. Railroads in certain areas granted special privileges to shippers handling hogs at these points. The hogs were delivered to the yards primarily by rail from other points along the railroad, and were then sorted, assembled, and weighed before being forwarded to final destination, the through freight rate being maintained between points of origin and destination. Other privileges granted included double-decking, mixing, and change of ownership. The granting of privileges by railroads has been more common at points west of Chicago than farther east. Railroad rate privileges at concentration points have been used little in recent years because most of the hogs are received at these yards by truck. Concentration yards, however, still are important as places for sorting livestock and for loading hogs into double-deck cars—a practice which tends to reduce transportation charges. Cattle and calves are now also handled at some concentration yards.

A third of the concentration yards in the Cornbelt region in 1940 were affiliated with or owned by packers. They assembled the livestock for direct shipment to their own plants. Sales to these concentration yards are on the same footing as sales direct to packers; the packer buyer is simply operating at a distance from his plant.

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[9] For an extended study of livestock auctions, see: Sam H. Thompson and Knute Bjorka, *Community Livestock Auctions in Iowa,* Iowa Agr. Exp. Sta. Bul. No. 376, 1938.

CENTRAL OR TERMINAL PUBLIC MARKETS FOR LIVESTOCK

Less livestock is sold at central or terminal public markets in the Cornbelt region than at country markets taken as a group, as Figure 46 showed; but the public markets outrank any one kind of country market.

At the central or terminal market, as at local markets, livestock is inherently more difficult to handle than grain. Animals are perishable, not durable; they are difficult to grade by objective methods; and they cannot be sampled.

Accordingly, while grain is bought by sample on the trading floor of the terminal grain market, livestock has to be bought by inspection out in the yards. Rain or shine, hot or cold, the livestock buyers have to walk or ride from pen to pen, and see the livestock at first hand before they buy.

As the railroads opened up the West and the terminal markets developed at such cities as Chicago, Kansas City, etc., the markets at those cities went through a period when railroads and other interests would set up several different competing livestock markets in the same city.

The advantages of having only one central market for livestock at each city soon become so apparent, however, that the railroads and other interests pooled their forces and set up one modern union or central market in each city in place of the several scattered markets. This was done first at Chicago, with the opening of the present Union Stockyards at Chicago in 1865, and later at most of the other large cities.[10]

The livestock arriving at these terminal markets are usually fed, watered, and rested overnight before being exposed for sale the next morning, when the buyers go through the yards and bargain with the commissionmen who represent the owners of the stock. The terminal markets have been aptly described as "hotels for transient livestock." Ordinarily, they provide supper, bed, and breakfast for the livestock on their way to the packer.

From a physical point of view, most of the central or terminal markets for livestock operate at about as high a level of efficiency as the characteristics of the livestock permit. The stockyards are usually well located, well laid out, and well organized. Most of them were built for railroad transportation, but they have been adapted to truck transportation without too much difficulty.

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[10] A. A. Dowell and Knute Bjorka, *Livestock Marketing,* Chapter VI, McGraw-Hill, 1941. A good description of the development and present status of terminal public livestock markets is given in this chapter.

POSSIBLE REDUCTIONS IN TERMINAL MARKET CHARGES[11]

The commission rates and other charges at the terminal markets are set after hearings by the Packers and Stockyards Administration of the United States Department of Agriculture. The cost of selling hogs at the six largest terminal markets—commission, feed, yardage, switching, weighing, insurance, etc.—averaged 21 cents per 100 pounds in 1929–1932.[12] These charges vary to some extent with the cost of feed. At Chicago, the charges ranged from a peak of 26 cents per 100 pounds in 1929 to a low of 19 cents in 1932. On the average from 1923 to 1933 inclusive, these charges amounted to 3.2 per cent of the net returns that farmers in Iowa County, Iowa, received for their hogs. This percentage is about two or three times higher than the percentages for selling grain at the terminal markets, chiefly because of the characteristics of livestock as discussed above.

There is evidence that the charges at some terminal markets are higher than they need to be. The Farmers Union Livestock Commission at Omaha has paid patronage dividends each year since it was organized in 1917; for 1944, this dividend was 30 per cent. Their record at Sioux City is similar, their patronage dividends ranging from 50 per cent in 1923 to 4 per cent in 1937 and 25 per cent for each of the past four years.[13] The Central Cooperative Association at South St. Paul has a similar record; so have the National Producers associations at East St. Louis, Indianapolis, Detroit, and Cincinnati. This would indicate that the official rates at these markets could be substantially reduced, and still cover costs plus a fair profit, for moderately efficient firms.

The situation at Chicago is less clear cut. The stockyards there are located on half a square mile of high priced city land, valued by the stockyards company at $33,000,000. Even if the more conservative valuation of the Packers and Stockyards Administration (about half as high) is used, rental rates high enough to yield a fair return are high compared with the rates at St. Paul, for example, where the yards are located on lower priced land.

Livestock receipts at Chicago have been declining over the past 20 or 30 years, and this has increased unit costs. The expenses of solicitation and other services out in the country used to be high, until they were brought under some control by the Packers and Stockyards Administration and by the Livestock Exchange itself. The cooperative commission company—the Chicago Producers' Commission Association—does the largest volume of business of any firm on the market, but it has not paid any patronage dividend since 1925.[14] This is partly because, not being a member of the Exchange, it is more free to conduct rather expensive field solicitation and other activities which keep its costs about as high as the costs of private firms on the Chicago market. It is therefore less easy than in the case of the other markets to say how much reduction in rates is possible at Chicago, without further extended study.

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[11] This section benefited from information provided by I. W. Arthur and Sam H. Thompson of the Economics Department, Iowa State College.

[12] Chicago, 1932; East St. Louis and Kansas City, 1931; South St. Joseph and South St. Paul, 1930; and Sioux City, 1929. *The Direct Marketing of Hogs*, USDA, Misc. Pub. No. 222, 1935, p. 194.

[13] See the 1944 annual reports for these firms.

The benefits to producers and consumers that would result from lower rates are obvious. Private commission companies naturally resist any lowering of rates; in doing so, however, they may harm rather than benefit themselves. High rates both increase the number of firms on the market and reduce the total receipts at that market; most of the firms may be making little or no profit because of their small volume of business. Lower rates would force the inefficient operators out of business and attract more livestock to the market. A smaller number of firms would divide up a larger volume of business. They would be able then to operate more nearly at optimum capacity. The terminal livestock markets then would operate at about as high a level of efficiency and as low a level of cost as the physical characteristics of the livestock permit.

The terminal public livestock market then would be in the best position to meet competition with other markets, without its present handicap of high rates. It already has handicaps enough. One handicap is the high cost of the feed (often double the market price) that commission men use to "fill" the livestock before offering it for sale. This "fill" is nearly all waste, yet once the practice is established, no commission firm feels able to refrain from following it. High rental rates on high priced city land is another handicap at some markets. Even with charges reduced to the minimum, the "hotel" bill for supper, bed, and breakfast for livestock at the terminal market still is inevitably high. It costs money to run a hotel.

At small country markets, the hotel services for livestock are less, and those that are offered cost less than at the terminal market. The rent of the land is lower; the time involved is usually shorter; less than 10 per cent of the hogs are given any feed, and the quantity and cost of the feed for those that are fed is usually less than at most public markets. The overall cost of assembling hogs in the country, at packing plants, local markets, and concentration points, averages less than 10 cents per 100 pounds. This is less than half the cost at terminal markets given above.[15]

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[14] Sam H. Thompson, *Economic Trends in Livestock Marketing*, privately printed Ph.D. thesis, Iowa State College, 1940, p. 105. This particular firm argues that it is out to provide better service rather than merely to reduce costs. This argument is open to question (*Ibid.*, pp. 103–10).

The advantage of the terminal public market is the experienced salesmanship and the concentration of livestock buyers there. The development of packing plants out at country points, the provision of more adequate market news by the federal government, the development of trucks and good roads which give each farmer access to several buyers at different markets, and the development of auction markets at country points, have given country markets some degree of the same advantages; and this, plus the stronger bargaining position that farmers hold while their hogs are still on their farms, may equal or surpass the advantages of the terminal market.

The outcome of the competition between the terminal public markets and the country markets for livestock will depend upon two things—upon comparative costs, and comparative prices. The figures given above show that it costs less to bring the buyer out to the product than to bring the product in to the buyer—that is, it costs less to decentralize the livestock buyers out in the country than to centralize the livestock in the terminal public market. With respect to prices, it used to be possible for many buyers in country markets to outsmart farmers because the buyers had better market information than farmers. This advantage is rapidly disappearing, as shown earlier in Chapter 11, and it seems likely that the trend toward more direct marketing will be resumed with the return to peace time conditions. This will help to lower livestock marketing costs.

THE CARCASS WEIGHT AND GRADE BASIS OF SALE

In central markets, the livestock producer is represented by an experienced salesman—the commission man. In addition, livestock is bought on inspection, and grades are needed only for price reporting purposes. In the decentralized market, the livestock producer has to be his own salesman. And his job is more difficult than the commission man's at the terminal market, because it is more difficult for him to get the necessary market news. The different market points are numerous, and in most cases no government market reporter is located at those markets.

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[15] *The Direct Marketing of Hogs,* USDA Misc. Pub. No. 222, March, 1935, pp. 187–88.

NEED FOR DETAILED PRICE REPORTS

These features of decentralized markets mean that the market reporting service needs to provide farmers with more market information about both parts of the price making job—the determination of "the" price of the commodity, and the determination of the value of the particular lot that each farmer is offering for sale.

This requires, first, that reports of "the" price of the commodity in the various parts of the decentralized market be disseminated in greater detail than for central markets (because the decentralized markets are more numerous than the central markets), and second, that farmers be provided with means for determining the grade of the particular lot or lots involved in each sale.

The federal market information service has made some progress with the first job. It is providing more detailed market news of "the" prices of numerous farm products. The service, however, still has some distance to go. At present, it broadcasts livestock market price information merely by geographical areas. The service will not be fully satisfactory until it broadcasts prices by individual market points in the decentralized market, so that sellers know where to take their livestock to get the highest net market.

In addition, the number of individual market points to which farmers can send their livestock is fairly high, and it may be necessary to develop a new technique of broadcasting to cover them adequately without making the broadcasts excessively long. Market interpretations may need to be made, summarizing the situation in a few words as to which market points are high, average, or low; or broadcasts may need to be made by smaller regions than at present.

NEED TO EXTEND GRADING BACK TO THE FARMER

The second job is more difficult. It is establishing grades and extending grade information or grading services back to farmers, so that they can tell accurately the value of the individual lots they offer for sale.

In the case of most commodities, the grading is done by the buyer to whom the farmer sells his product. It is difficult for the farmer to tell how much of the grading done by this buyer really is grading, and how much of it is merely an attempt of the buyer to outsmart him by paying low prices on the pretext that the grade is low.

Farmers are willing to accept premiums for high quality products, but they are suspicious of discounts for low quality products. If buyers cannot pay discounts, they cannot pay premiums either. So they play a conservative game and pay only small discounts or premiums, or none at all. Thus consumers' preferences are reflected back as far as the "first buyer" but are not reflected the final step, clear back to the producer.

The obvious solution is to place the grading in the hands of a disinterested third party, such as the government. This solution is more obvious than easy to carry through. It would be expensive to have a government grader along at every local sale made by every local farmer, except where the sales are made in large lots. Accordingly, the attempt is being made, in different ways for each different commodity, to extend the benefits of government grading clear back to the point where the farmer makes the sale, and to do this at as low a cost as possible.

This job is being done in the case of cotton by the free cotton classing services offered under the Smith-Doxey Act, as shown in Chapters 6 and 20. More than a third of the cotton now is sold on that basis. The job is being done in the case of fruits and vegetables by the federal-state shipping inspection service, in percentages ranging from 20 to 50 for different fruits and vegetables. It is being done on a considerable scale for tobacco, and to a certain extent for grain by the federal grain inspection service.

The job is not being done at all, however, in the case of livestock. In Canada, pork grading is carried back to the farmer by shifting the basis of sale of hogs from the live hog to the carcass, with a government inspector grading the carcass in the plant, as shown in Chapter 14. But meat grades in the United States are not carried back to the farmer by any government grading service at all.

Several benefits would follow if the basis of sale in the United States were shifted from the live animal to the carcass. This step would come close to solving both the market reporting problem and the grading problem. It would thus greatly improve the conditions under which farmers in decentralized markets could sell their own livestock themselves. At present, packers either have to quote prices per 100 pounds live weight in fairly wide ranges, to cover the fairly wide range of values that exist among livestock of equal live weight, or else pay too nearly a flat price for all animals of a given weight. Both of these alternatives are bad. Shifting to the carcass weight and grade basis would reduce the range of values within a given carcass weight and grade, and permit prices to be quoted in much narrower ranges, or in single figures for each carcass weight and grade as in the case of hogs in Canada. Farmers then could compare bids by carcass weight and grade at different markets far more accurately than they can on the present live weight basis, and be free of any need to dicker with the buyer about the grade. The government grader would settle the grade for both parties. A new step forward thus would be taken in livestock marketing efficiency.

THE COMPETITION AMONG LIVESTOCK PROCESSORS

No study of livestock marketing and processing costs would be complete without an analysis of the nature of the competition among livestock processors, both in their buying of livestock and in the selling of their livestock products.

Meat packers often have pointed out that they do not set the price of livestock. The housewife, they explain, does that. All they can do is pass her verdict back to the farmer. This misses much of the point at issue; the width of the margin they take out of the housewife's dollar on its way back to the farmer "sets the price of livestock" as truly as the housewife's actions.

The basic information as to the production and pricing policies of the individual large processors required for a study of the whole problem of the nature of their competition has been difficult to get. The meat packers have been averse to divulging information to the public, giving as their reason their desire not to release information of value to their competitors.

Statistical information concerning *total* slaughter and total cost to packers by species of livestock has been compiled and published by the Bureau of Agricultural Economics. In recent years that bureau also has been publishing current weekly information as to the average wholesale value of all edible products from 100 pounds of live hog, based on daily data from the National Provisioner. Almost the only data available on an individual packer basis are the weekly statistics published by the National Provisioner showing the number of head of the different kinds of livestock purchased on each of about a dozen of the most important central markets by each of the important packers on those markets. The data can readily be converted into percentages of the totals at each market. The stability of these percentages, both over a period of years and over shorter

TABLE 26

HOGS: PERCENTAGES OF TOTAL "BIG FOUR" PURCHASES TAKEN BY EACH OF THE FOUR FIRMS BUYING AT FIVE TERMINAL MARKETS, AVERAGE 1913–17, BY YEARS 1931–37, AND AVERAGE 1931–37*

Market and Firm	Average Annual Standard Deviation 1931–37§	Annual Average Purchase Percentage							Percentage Average 1931–37	Percentage Average 1913–17	Estimated Percentage 1906–11†
		1931	1932	1933	1934	1935	1936	1937			
Omaha:											
Armour-Morris‡	±2.17	45.2	45.2	44.1	45.2	44.2	44.0	43.9	44.6	46.6‡	45
Swift	2.06	24.4	24.4	25.2	24.9	24.7	24.9	24.9	24.8	24.2	25
Cudahy	1.88	30.4	30.4	30.7	29.9	31.1	31.1	31.2	30.7	29.2	30
St. Paul:											
Armour	1.97	40.3	40.2	39.9	39.6	40.0	40.6	43.6	40.6	no plant	..
Swift	1.97	59.7	59.8	60.1	60.4	60.0	59.4	56.4	59.4	.....	..
Sioux City:‖											
Armour	1.89	39.8	38.2	38.7	38.6	38.1	39.2	39.3	38.8	...	..
		(50.1)	(49.6)	(50.1)	(49.9)	(49.6)	(50.6)	(50.8)	(50.1)	(50.3)	..
Cudahy	1.68	39.7	39.1	38.6	38.8	38.7	38.3	38.1	38.8	..	.
		(49.9)	(50.4)	(49.9)	(50.1)	(50.4)	(49.4)	(49.2)	(49.9)	(49.7)	..
Swift	2.12	20.5	22.7	22.7	22.7	23.2	22.5	22.6	22.4	no plant	..
		(...)	(..)	( )	(..)	( )	( )	( )	(.)	.....	..
St. Joseph:											
Swift	1.84	57.8	53.6	53.1	52.9	53.1	53.3	53.1	53.8	48.4	..
Armour-Morris‡	1.84	42.2	46.4	46.9	47.1	46.9	46.7	46.9	46.2	51.6‡	..
Oklahoma City:											
Armour-Morris‡	1.09	49.9	50.2	52.3	50.3	50.1	50.0	49.8	50.4	50.6	...
Wilson	1.09	50.1	49.8	47.7	49.7	49.9	50.0	50.2	49.6	49.4	....
Average, 5 markets	1.80										

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* Data for 1931–37 computed by W. H. Nicholls and I. W. Arthur from weekly reports of *National Provisioner*. Data for 1913–17 computed from Federal Trade Commission, *op. cit.*, Part II.

† Testimony of former hog buyer for major company at Omaha, Federal Trade Commission, *op. cit.*, Part II, p. 9.

‡ Armour and Morris merged in 1923. Figures for 1913–17 and 1906–11 are the total of Armour and Morris percentages at each market.

§ Standard deviation of weekly percentages from annual mean percentage was calculated for each year 1931–37 and then average 1931–37 computed. Slight adjustments, involving elimination of a very few obviously extreme items, were made for St. Paul (1933); St. Joseph (1931 and 1937); and Oklahoma City (1933).

‖ Swift had no plant at Sioux City in 1913–17. In order to compare recent data with those of the war years, the figures in parentheses were calculated to show Armour and Cudahy relative to each other if Swift is omitted.

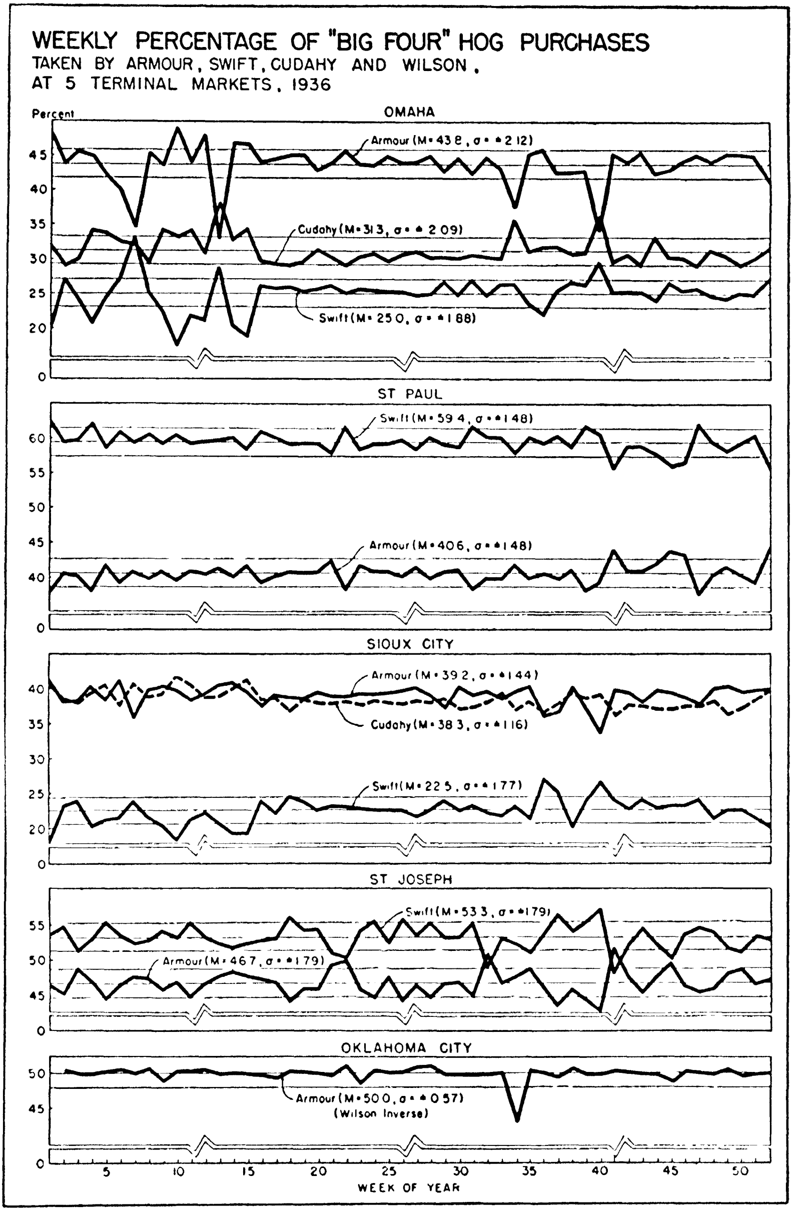

FIG. 47.—Weekly percentages of "Big Four" hog purchases, 1936.

periods, is shown in Table 26 and Figure 47, reproduced from a specific study of these data[16].

What does the constancy of these percentages mean? Nicholls, the author of the article from which Table 26 and Figure 47 were taken, dismisses some of the explanations that have been offered by the packers, and says:

"Other statements by economists of Swift and Company, however, appear to be more valid. Thus, Dr. L. D. H. Weld testified that:

'If we try to exceed our customary percentages in any market, we could not get away with it, that is all. To do that, we would have to raise the bid over the market price. Morris, Armour, and Wilson would not stand for it, that is all. They would meet our prices and there would be cut-throat competition.'*

"This statement brings out remarkably clearly the fact that Swift, in spite of being the largest buyer of livestock, had to consider carefully the reactions of its largest competitors to its own price and volume policies.

"The best statement of all, however, from the standpoint of brevity and honesty, is that of George E. Putnam of Swift and Company, who tried to offset the repercussions of the Trade Commission report in England. Putnam writes:

'Referring to the status of the United States companies, the (British) Sub-committee stated that even though these companies, as they allege, are quite independent of one another, "formal independence is quite consistent with a simple tacit understanding to respect each other's position."

'Unquestionably,' Putnam continues, '*there is an element of truth in this statement*, but it might easily be misconstrued. It should be observed that the general practice among intelligent competitors of respecting one another's position need not be a matter of "tacit understanding." *In the case of Swift and Company it is an individual, commonsense policy, arrived at independently, not to invite retaliation and trade wars by using overaggressive tactics.* (Swift) has deliberately tried to avoid cut-throat competition wherever it was legally possible to do so.

'The same policy will always be followed by intelligent men. Purely as a matter of self-interest, no intelligent and successful business man wants to destroy his competitors. He knows that he himself may not survive the competitive struggle. Or if he should survive that struggle and become a monopolist, he knows that private monopoly, in these days of democratic government, will invite public ill-will and destructive legislation. It is clearly a matter of sound business policy to avoid cut-throat competition, but, unfortunately, there are times when the tactics of a competitor may become intolerable and in the interests of self-preservation one must have recourse to the same tactics. Thus a trade war may be provoked by an overaggressive policy on the part of one competitor.'[17]

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[16] William H. Nicholls, "Market-Sharing in the Packing Industry," *Journal of Farm Economics*, Vol. XXII, No. 1, February, 1940, p. 225.

* 66th Cong., 2nd Sess., *Hearings on H. R. 6492*, pp. 1023–26. Cf. Testimony of Edward Morris, quoted in Virtue, *loc. cit.*, p. 671.

"To the writer's mind, this is the best statement of the philosophy of 'business economics,' as opposed to 'social economics,' that he has ever found. The interesting thing is that it was offered in defense of the policies of the dominant packers, whereas no better evidence of their 'live and let live' attitude and the imperfect nature of competition in the industry could be presented, in light of more recent developments in economic theory. Our theory led us to expect that, while market-sharing might take place at any price level, rational behavior on the part of the large rivals would tend to establish prices approaching the monopoly level. Putnam's statement supports the presumption that 'intelligent' competition will prevail, even if the participants are fully independent of each other."

The constant percentages into which the volume of slaughter is divided among the big packers may be regarded as an evidence of what is called a "non-aggressive" price policy. To stabilize the competition among themselves, the dominant firms may agree to share the market (volume) among themselves in certain stable percentages. With respect to prices, the group of dominant firms (or if the firms differ much in efficiency, the most efficient one of the dominant firms) then exercises price leadership for the industry as a whole. These prices leave the smaller firms free to take over an increasing share of the total business if they wish (the price leadership is "non-aggressive" in this case, too).

The preceding paragraph is not offered as an explanation. It is scarcely even a guess, for so little is known about packers' price and production policies. The conclusion is obvious, however, that the big packers' situation is not a case of simple atomistic competition, with each producer ignoring the actions of his rivals; neither is it a case of simple monopoly; nor can it be explained by the principles of monopolistic, imperfect, or oligopolistic competition in the highly abstract form in which they are presented in most of the literature. There is a gap between principles and applications which needs to be bridged by research based upon intimate knowledge of the packing industry and an extension of existing economic theory. One study of this kind has already been published.[18] Others no doubt will follow.

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[17] George E. Putnam, *Supplying Britain's Meat.* Geo. G. Harrap and Co., Ltd., London, 1923, pp. 124–26.

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[18] William H. Nicholls, *Imperfect Competition Within Agricultural Industries*, the Iowa State College Press, 1941. See also his "Imperfect Competition in Agricultural Processing and Distributing Industries," *Canadian Journal of Economics and Political Science*, Vol. X, No. 2, May, 1944.

CHAPTER 18.

Reducing Butterfat and Butter Marketing Costs

Most butterfat is sold in the form of cream separated from whole milk on the farm. The bulk of the butterfat is produced in small quantities. The average size of the milk cow herd in Iowa, for example, is only about seven cows. Butterfat is a very perishable product, so it needs to be hauled to the local creamery without delay, within a day or two of the time it is skimmed. This hauling to the creamery can be done by the farmer himself on his ordinary business trips to town if he goes frequently enough. The average farmer, however, usually has only one or two cans per trip, and these small lots make for inefficiency in handling at the creamery, both for the farmer and for the creamery. Accordingly, it is more efficient to have butterfat hauled to the creamery by a creamery hauler on a regular collection route, who is able to assemble good sized loads from a number of farmers.

Compared with livestock, butterfat is a pretty well standardized product, and the prices from different local creameries can be compared fairly closely. Competition therefore operates on a reasonably high plane. In spite of this, however, and in spite of the potential physical efficiency of the cream hauling system noted above, local cream marketing costs one or two cents per pound more than it needs to cost. The situation in one of the counties in the dairy section of Iowa, as reported by two investigators in 1939, illustrates the situation all over the Dairy Belt.[1] A summary of their report follows.

CUTTING BUTTERFAT MARKETING COSTS

When horse drawn vehicles were the only means of transporting cream, and Iowa roads were nearly all unimproved and unsurfaced, each local creamery got its butterfat supplies from the area immediately surrounding the creamery. The most distant patrons were within driving distance of the creamery where they ordinarily delivered their own butterfat. Creameries sprang up wherever the density of production became great enough within a limited area to make the operation of a creamery feasible. In 1898, 811 local creameries dotted the state of Iowa. These plants made a total of 88 million pounds of butter or an average of only a little more than 100,000 pounds each.

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[1] Paul E. Quintus and Frank Robotka, "Cutting Butterfat Marketing Costs," *Iowa Farm Economist,* Iowa State College, July, 1939.

Since then, improvements in roads and motor vehicles have expanded the size of the area from which a creamery can assemble its cream. Cream or milk ordinarily is picked up at the farm and delivered to the creamery door by truckers operating collection routes. The area which can be served economically by a single plant has been enlarged many fold. The size of creameries has increased several times over. The average size now is over 500,000 pounds. But the number of creameries in Iowa has not dropped proportionately. Nor have the remaining creameries established natural trade territories—territories expanded to the point where reductions in the cost per unit of processing, resulting from the increase in volume, are offset by the increasing cost of transportation and possible reduction in quality.

The dairy industry is slowly adjusting itself to a "good roads economy." But the slowness of the process is depriving dairy farmers of thousands of dollars of extra income now.

In Butler County, Iowa, for example, 23 different creameries (13 of them outside the county) still share in processing the 2½ million pounds of butterfat produced annually in the county. The necessarily small volume handled by each plant makes costs about one cent per pound higher than they need to be. In addition, the costs of procuring cream by creameries probably could be lowered fully one cent per pound by a logical rearrangement of trade areas and truck routes.

All except one of these 23 creameries operate truck routes in the county. Detailed comparable records were available for only 13 of the creameries, 9 located in Butler County and 4 in nearby territory. For these 13, a total of 78 milk and cream routes were being operated in 1937. With the exception of the one creamery which had no routes, the number per creamery varied between 2 and 20. About 77 per cent of all the butterfat was delivered to these creameries on established truck routes and 23 per cent was accounted for by direct delivery.

The 78 routes operated by the 13 creameries averaged about 40 miles per route on a round-trip basis. The average length for cream routes only would be somewhat greater since milk routes were among the shortest. In general, the longer routes served more patrons and hauled more butterfat. In some cases, however, routes are long because patrons are widely scattered, not because they are numerous. For this reason the average number of miles traveled per patron in some cases is excessively high. All routes averaged somewhat over 1½ miles between stops. The following tabulation shows the distribution of routes by number of miles traveled:

Miles Traveled per Patron	Number of Routes
Under 1	5
1.0–1.49	28
1.5–1.99	21
2.0–2.49	9
2.5 and over	4

Another measure of the efficiency of procuring cream is the amount of butterfat hauled per mile of travel. Ten of the routes surveyed actually hauled less than 4 pounds of butterfat for each mile traveled! And on 64 of the routes the creameries were getting less than 10 pounds of butterfat per mile of route.

HAULERS OWN TRUCKS

With the exception of two trucks owned by private creameries, all the trucks used on the cream routes of these creameries were owned and operated by the haulers. None of the creameries had entered into written agreements with haulers. Such matters as patrons served, route of travel, territory covered, and the like were largely in the hands of haulers. The creameries appear to have fairly satisfactory relations with haulers regarding care of cream, handling of cans, duties at the plant, and so on. In some cases, however, the creameries were not satisfied with every trucker in all respects and yet they were reluctant, or lacked authority to discharge them.

In one case a hauler was unsatisfactory in many ways, especially regarding the time consumed on the route and late arrival at the plant. But every attempt by the management to bring about improvement or resignation was met by the proposition that the hauler would keep his patrons and deliver their cream to another plant. The significant thing is that the creamery knew that this might actually be carried out. It was obliged, therefore, to accept unsatisfactory trucking service for fear of losing patronage and volume.

Since haulers are permitted to solicit partons and since producers too often patronize haulers rather than the creamery, considerable shifting of patrons among haulers may occur. This may or may not mean changing creameries but, in any case, it sets in motion a scrambling process which tends to destroy any rational basis of establishing truck routes.

TRUCKERS ON COMMISSION

Except in the cases of the two creameries which owned trucks, haulers are paid on a commission basis—so much per pound of butterfat hauled. One creamery pays its haulers with the longest routes 2.5 cents commission and 2 cents to the others. This is the only case in which the rate varies for different routes for a given creamery. In no instance did a creamery make any variation in the hauling charge among patrons on a given route. Of 67 routes operated by haulers on commission, 29 were operated at a rate of 2.5 cents and 23 at a rate of 2 cents at the time of this survey. On 10 routes the rate was 2.7 cents and on 5 routes, 3 cents.

The hauling charge paid truckers is divided between the creameries and the patrons in different ways. In half the cases, the entire hauling charge comes out of the patron's check. The other creameries deduct some portion of the hauling charge from cream checks and absorb the balance in creamery expense. Most creameries paying the higher hauling charges deduct only a portion of the charges from their patrons' checks. Sometimes this is for competitive reasons and serves to confuse the patron regarding the actual cost of hauling.

It is difficult to estimate hauling costs, because none of the truck operators in this survey kept records. An approximation to the net returns to haulers for the first half of May, 1937, may be obtained by multiplying the total miles traveled in each route by an assumed cost per mile and comparing the result with the total income received for hauling. This calculation shows that many of the truckers were not receiving very much revenue from their routes. Nearly half of the routes yielded less than $25 labor income for the 15-day period. This is significant because it shows that the high cost of collecting cream in Butler County is not a result of excessive earnings of the truck operators.

OVERLAPPING OF ROUTES

Each of the creameries in Butler County has a trade area in which it competes with several other creameries. The combined area of the trade territories is more than three times the area of the county. The 21 creameries which pay haulers on a commission basis operate 73 truck routes in the country, covering about 2,400 miles. There are only slightly over 1,000 miles of road in the county. And more than half of this mileage is classified as "not built."

To show how much overlapping actually exists, we made a complete census of the producers in a selected central township of Butler County. Of the 152 farmers in the township, 143 were selling butterfat to nine different creameries. The bulk of the sales were made at five plants, as shown in the following tabulation:

Creamery	Number of Patrons
A	42
B	39
C	27
D	15
E	12
F	4
G	2
H	1
I	1

Creameries D, H, and I are located outside the county. With few exceptions, the patrons of any one creamery are not highly concentrated within the area near to it. On the contrary, several creameries have patrons scattered over a large proportion of the township. Only 4 of the 36 sections in the township were served entirely by one creamery and these four had only two producers each. Nearly half the sections, averaging about four farmers each, were represented at three or more creameries. The nine creameries obtaining butterfat from this township operated 17 truck routes in the area. The location of all the routes and the patrons served are shown in Figure 48. The township is reproduced four times, with some of the routes shown on each of the diagrams.

The same sort of overlapping and duplication of routes exists all over Iowa. A survey of about half the cooperative creameries (one-fourth of all the creameries) in the state in 1935 showed the territories from which they were procuring their cream. The territories are shown in Figure 49. If all the creameries in the state were included in the chart, the chart would be almost undecipherable.

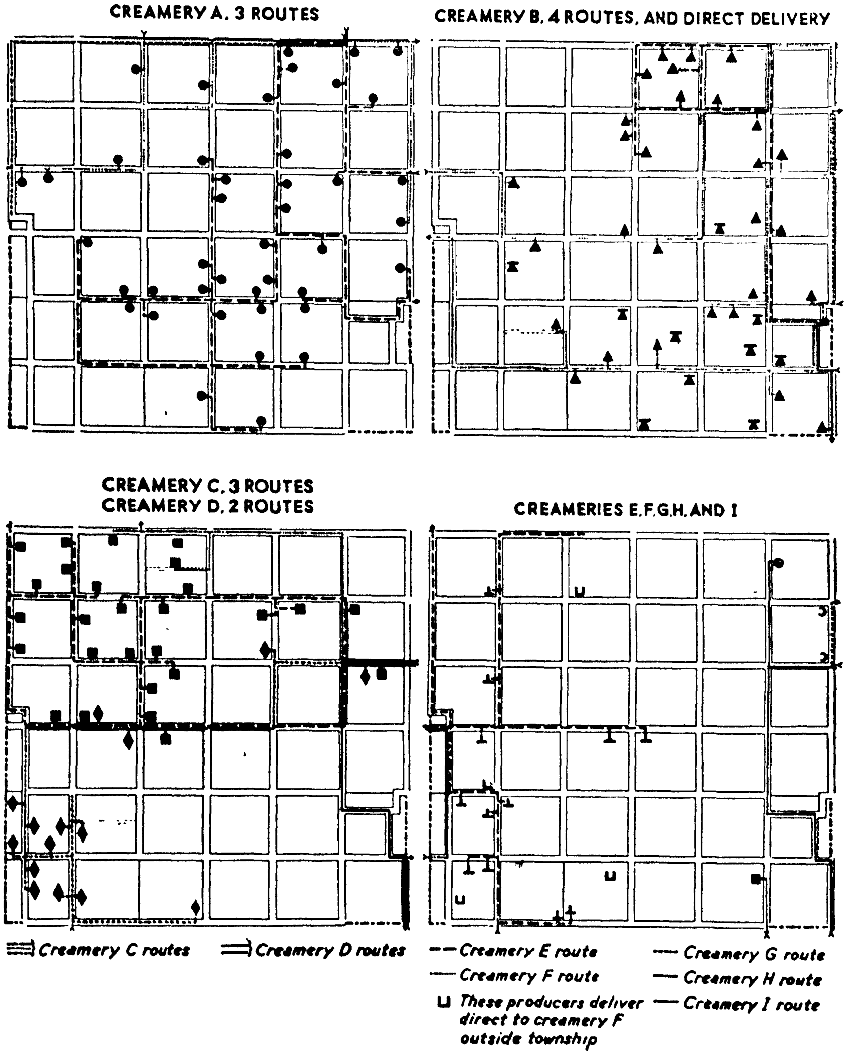


FIG. 48.—Cream truck routes and producers served, May 1937. Selected Butler County township.

LOWER QUALITY

The overlapping of trade areas, besides resulting in a high cost of procuring butterfat, also causes a generally lower quality of cream than could be obtained under a more efficient system. In Butler County the percentage of sweet cream is highest for direct deliveries, next highest for truck routes of 40 miles and under, and

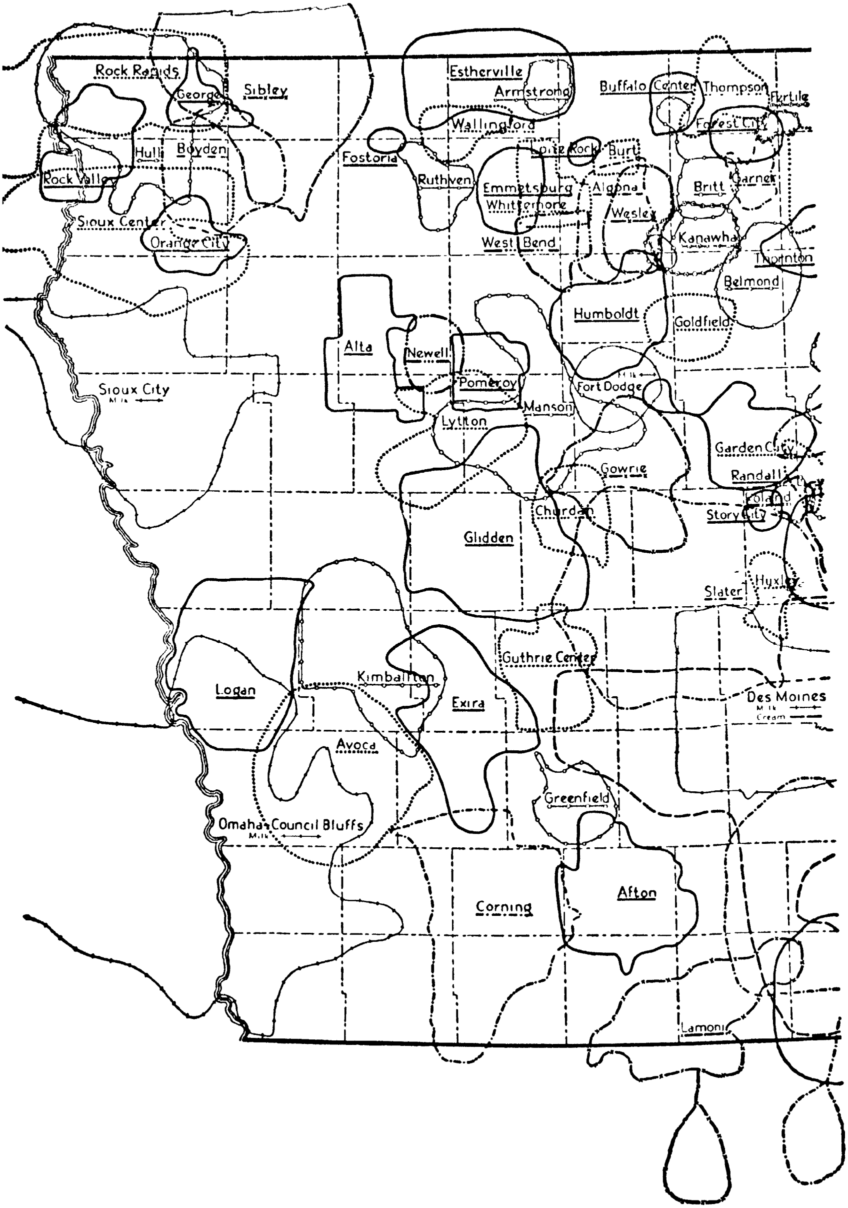
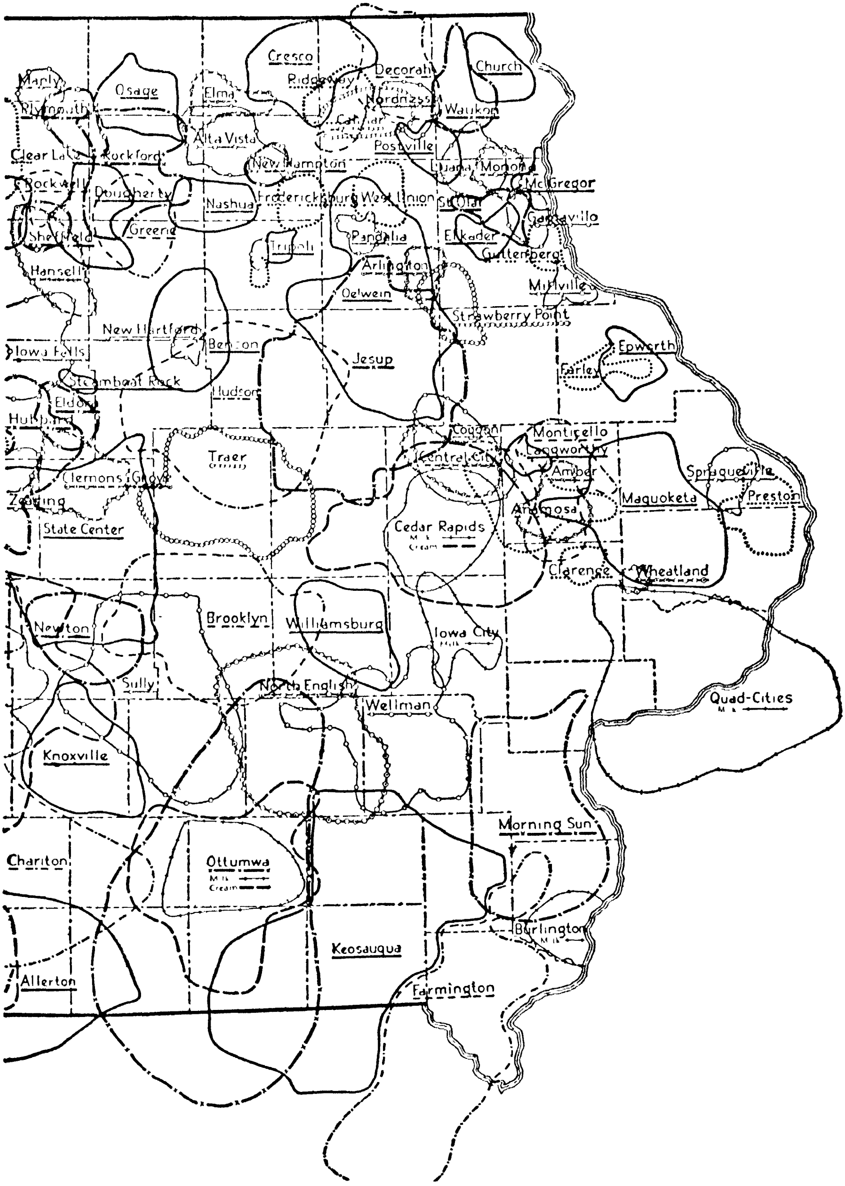


FIG. 49.—Trade territories served by 139 Iowa Farmers' creameries, 1935.

lowest for routes over 40 miles. The truck route system does not necessarily cause lower quality. One creamery with 97 per cent



(From Frank Robotka and Gordon C. Laughlin, *Cooperative Organization of Iowa Farmers' Creameries,* FCA Bul. No. 14, 1937.)

trucked cream had 91 per cent sweet cream during the time of the survey, May 1-15, 1937. Quality of the cream delivered depends to a large extent on the frequency with which the route is covered. Under existing conditions, most haulers cannot afford to make more frequent trips. But if routes were reorganized on a more efficient basis, they could make more frequent deliveries—over a shorter route and in a smaller area—at no loss in net income, even with some reduction in commission rates.

SMALL CREAMERIES

What makes cream-gathering costs high is the jumble of routes and overlapping trade areas. This jumble, in turn, is largely a result of the fact that the organization of creamery trade areas has not kept pace with the development of good roads and trucks.

As a group, the Butler County creameries are small. Only one produces more than half a million pounds of butter per year, and the average in 1936 was less than 240 thousand pounds. The average for all creameries in 25 northeast Iowa counties was 361 thousand pounds.

Previous studies of creamery business problems have shown that costs decline as volume increases, at least until the annual volume is larger than a half million pounds of butterfat. Comparisons have shown that creameries in the 500-thousand-pound class have an average advantage in operating costs of one cent or more per pound of butterfat over creameries manufacturing 200 to 250 thousand pounds.

The most efficient size from an operating standpoint is still larger than 500 thousand pounds. A study of 173 Minnesota cooperative creameries in 1934 showed that all of the creameries with a volume of 700 thousand pounds or more had costs of operation lower than three cents per pound of butter made. The creameries with a volume well over a million pounds operated at a cost lower than two cents per pound. The data from another Minnesota study made in 1941-42 are shown in Table 27. Studies in California show that the optimum size there is between 2.5 and 4 million pounds.

WHAT INDIVIDUAL CREAMERIES CAN DO

Individual creameries can do much to improve their efficiency. They can independently reorganize cream routes, obtain better control of them and minimize hauling costs. The creamery that succeeds in drawing even its present small volume of business from the smallest possible trade area gains a competitive advantage through lower hauling costs.

The prevailing system of paying truckers on a commission basis

TABLE 27

SUMMARY OF MANUFACTURING COST PER POUND BUTTER COMPILED FROM AUDITS OF 168 MINNESOTA CREAMERIES MAY 1, 1941, TO APRIL 30, 1942 (Costs in cents per pound)

	Size of Creameries in Thousands of Pounds							
	Group I Over 500	Group II 400–500	Group III 300–400	Group IV 250–300	Group V 200–250	Group VI 150–200	Group VII 100–150	Group VIII Under 100
Plant expense								
Labor	.687	.787	.911	.961	1 030	1.129	1 069	1 477
Other plant	.716	.713	.859	.855	1 032	1.021	1.007	1.094
Total	1 403	1.500	1.770	1.816	2.062	2.150	2.076	2.571
Executive and office expense	235	.225	.254	.253	.242	.328	.263	.354
General expense	.542	.532	.658	.659	.832	.802	.769	1.067
Total cost per pound	2 180	2 257	2.682	2 728	3.136	3 280	3.108	3.992

Source: Summary of Comparative Costs of Operation, Period Ending May 1, 1941, to April 30, 1942. Compiled by the Cooperative Auditing Service, Inc., Minneapolis, Minn.

without designating the territory or the farmers they shall serve, the confusing methods of charging hauling costs to patrons, and the lack of effective control over hauling practices explain much of the inefficiency in obtaining cream by local creameries.

Creamery ownership of trucks is often advocated as a measure of obtaining control over truck drivers and truck routes. However, in Butler County, creamery managements generally are of the opinion that hired truck operators are negligent in the care of trucks, and that this increases trucking costs.

Without a reorganization of trade areas, it is doubtful that ownership of trucks would result in average hauling costs as low as existing commission rates in Butler County. Under the existing system many haulers are not earning the going wage rate and the replacement value of their trucks. Some creameries probably do not care to own their trucks because they would have to assume responsibility as to where the truck driver went and what he said.

Creamery ownership of trucks affords many advantages from the standpoint of control of competitive abuses. Where a creamery is operating several routes, each hauler can be assigned a specific territory and thereby at least eliminate competition that now exists between haulers at the same creamery.

As an alternative to creamery ownership and operation of trucks, a definite written agreement between the hauler and the creamery is a desirable means of exercising control over routes.

To the extent that scrambling of patrons and creameries is the result of methods of quoting prices, methods of charging hauling costs and other competitive practices that make it difficult for producers to determine the best outlet, a greater amount of uniformity in business and accounting methods, and a higher standard of business ethics would place competition more definitely on a basis of relative efficiency. Many self-governing measures might be adopted voluntarily by the creameries. It might be desirable to supplement such industry action with appropriate legislation.

COOPERATIVE ACTION AMONG CREAMERIES

Although anything that can be done to place competition more definitely on the basis of efficiency is desirable, the concentration of butter manufacturing in fewer and more efficient plants would even then involve considerable time. The least efficient creameries would sooner or later be forced out of business, in most cases at considerable cost to present owners. Farmers patronizing such creameries in the meantime would be burdened with high costs.

Since a reduction in the number of creameries seems inevitable, particularly in certain parts of the state, a quicker and more economical way of bringing about the adjustment in most cases would be by deliberate cooperative action on the part of farmers and creameries. The members or owners of two or three creameries in a given area might set up a new organization which would purchase the assets of several existing units. The new organization would make the most advantageous use of all facilities under its control and liquidate the surplus facilities.

On a larger scale, creameries in several counties might go together and on the basis of a careful survey and analysis of the whole area, establish several economic units. Still another plan would be for the dairy industry of the state to sponsor legislation which might provide for the voluntary establishment of districts for surveying and appraising the most economical butterfat marketing system. These districts might issue bonds which could be liquidated by means of a butterfat tax levied for the purpose in the district. Each of these different plans is being followed in various parts of the United States or in other countries.

It's up to farmers and creamery operators whether they permit nature to take its painful and long-drawn-out course or whether they deliberately reorganize their butterfat marketing system through a carefully planned program. Reorganizing the cream-collection routes would save about one cent per pound, and consolidating creameries would save an additional cent per pound. Here is a case where marketing costs could be reduced substantially by intelligent group action.

CHANGES IN WHOLESALE BUTTER DISTRIBUTION[3]

Before World War I, the two chief marketing channels for butter were: (1) creamery—wholesale receiver—jobber-retailer—consumer, and (2) creamery (usually centralizer or packer)—exclusive sales agency—retailer—consumer. The former channel, however, was already undergoing those alterations which were tending toward a shortening of the distributive process. Many wholesalers were also beginning to perform the jobbing function, thus eliminating one step in the channel.

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[3] This section is based chiefly upon parts of: William H. Nicholls, *Post-War Developments in the Marketing of Butter*, Agr. Exp. Sta. Res. Bul. 250, Iowa State College, February, 1939; and A. C. Hoffman, *Large Scale Organization in the Food Industries*, TNEC monograph No. 35, U. S. Gov. Ptg. Off., 1940.

The wholesaler-jobber himself was none too secure. The chain store had already begun to challenge the wholesaler as well as the independent retailer, as its policy of integration and direct purchase from the manufacturer got under way.

The thousands of small local (largely cooperative) creameries throughout the dairy states originally used the wholesaler-jobber route. After 1924, however, two federations of local cooperatives—Land O'Lakes Creameries, Inc., and Challenge Cream and Butter Association—were organized by local cooperative creameries and cheese factories as their own wholesale assembling and distributing agency. They quickly rose to a position of importance in the trade.

Land O'Lakes Creameries, Inc., was organized in 1924 to serve as the sales agent for a group of cooperative creameries in Minnesota and Wisconsin. It was the outgrowth of an organization of Minnesota

TABLE 28

VOLUME OF DAIRY AND POULTRY PRODUCTS HANDLED BY LAND O'LAKES CREAMERIES, INC., 1924–36

Year	Butter *1,000 Lbs.*	Cheese *1,000 Lbs.*	Milk Powder *1,000 Lbs.*	Eggs *1,000 Cases*	Poultry *1,000 Lbs.*	Dressed Turkeys *1,000 Lbs.*
1924	32,842	...		...		
1925	79,107		...	10		...
1926	79,567		733			...
1927	84,257		2,937	...	...	
1928	86,649		7,865	108	1,197	...
1929	93,115	...	20,819	53	3,396	...
1930	100,993	...	19,150	106	3,272	...
1931	98,215	...	13,193	113	...	2,927
1932	98,138	4,539	12,625	125	4,243	5,541
1933	98,392	7,084	5,328	107	4,818	5,959
1934	85,018	23,250	5,419	153	4,074	4,811
1935	78,816	24,074	9,064	156	4,478	4,022
1936	74,154	21,329	5,131	216	2,913	5,800
1937	70,941	20,319	8,926	172	3,886	4,453
1938	70,776	23,210	12,128	286	3,680	3,982
1939	77,335	24,122	11,195	283	5,866	5,053
1940	70,631	23,458	13,311	288	6,850	7,495
1941	68,432	28,089	22,078	330	6,625	8,443
1942	75,850	34,616	45,300	292	7,348	9,100
1943	63,067	31,162	64,784	323	9,385	5,679
1944	54,638	34,247	67,062	361	8,846	6,477

1924–34 data from Farm Credit Administration, Cooperative Division, Bul. No. 3, *Cooperative Marketing of Agricultural Products*, p. 26; 1935–44, data direct from Land O'Lakes Creameries, Inc.

creameries begun several years earlier. Prior to this effort to build a cooperative distributive agency, the creameries in these states sold their products mainly to private wholesale assemblers on an individual basis.

Land O'Lakes originally built its business around butter, but in recent years has handled increasing quantities of other dairy and poultry products. (See Table 28). Its volume of butter has declined substantially since 1930, but there has been an increase in several other lines of its business, notably cheese. In 1934 it entered into an arrangement with the National Cheese Producers' Federation (a cooperative handling cheese for Wisconsin factories) to sell and distribute part of the cheese assembled by the latter agency. The sharp increase in Land O'Lakes cheese sales during the last few years is due mainly to this arrangement.

Land O'Lakes operates no manufacturing facilities of its own. Its main function is to act as sales agent for its member creameries. At the present time about 400 creameries and dairy-manufacturing plants sell their products through this organization. In addition to this selling service it employs a staff of field agents to help its members with plant problems and quality improvement, and also furnishes them with manufacturing supplies and equipment at cost.

Land O'Lakes is a vertically integrated marketing organization which has sought to carry the product as far toward the consumer as possible. The distributive functions which it performs are wholesale assembling, grading, and branding and selling to the trade in wholesale and job lots. Most of the products which it handles are shipped to its plant at Minneapolis where they are graded and repacked under the trade-mark of the cooperative. Emphasis has been placed on quality, and the organization has sought to make its product known to the consumer through brand advertising. It operates branch jobbing houses in a number of the larger cities where sales are made direct to retailers, hotels, and local institutions. Sales are also made to corporate and cooperative chains, which distribute the product under Land O'Lakes brand. Recently Land O'Lakes made an arrangement with Armour to distribute Land O'Lakes' product in territories where it has no jobbing facilities of its own.

The Challenge Cream and Butter Association is a cooperative very similar to Land O'Lakes in type and method of operation. Its business, whose volume is about half that of Land O'Lakes, is confined mainly to the Pacific coast. Although its main product is butter it handles a complete line of dairy products.

The association acts as the sales agent for handling the products manufactured by its member creameries. One of its principal functions has been to develop wider market outlets for these products than the creameries could do individually. Like Land O'Lakes, it merchandises its product under its own brand and has sought to integrate as far toward the retailer as possible by establishing sales offices and jobbing branches in the larger cities of its territory.

EMPHASIS ON QUALITY

Land O'Lakes' whole campaign was centered on "quality appeal." In its desire to develop a pronounced consumer preference for its products, it packaged its butter under its own brand. It sought to hasten the trend away from bulk butter, which was sold to the final consumer from tubs. Important savings on freight were made as a result of reductions in cross-shipments, and less butter was "dumped" on the central markets (it was charged that this "dumping" broke prices).

In conjunction with Land O'Lakes' drive for quality, the first cooperative arrangement with the United States Department of Agriculture providing for grading at central country points was drawn up. When this privilege was made available to private companies as well, a trend toward federal grading at or near the point of production instead of on the central markets was under way. This movement at the same time tended to eliminate the need for what had once been an important function of the wholesaler—that of grading and standardization—and thereby favored more direct marketing.

The chain stores grew very rapidly during the 1920's, and as their demands for butter increased, they turned to the establishment of their own integrated distributive facilities to which they solicited the shipment of high quality butter direct from country creameries. The leading packers and centralizers also were increasing their number of plants rapidly. They were manufacturing more and more butter; they also were buying increasing quantities from other manufacturers in order to make the most economical use of their nation-wide selling organizations.

The rapidly increasing importance of these various types of large scale, direct-distributing agencies brought great pressure to bear on the old-line wholesalers. From 1926 on, increasing amounts of butter were diverted from the lengthy channel, which included the wholesalers and jobbers, to the more direct, integrated route. The result was a definite tendency toward a reduction in the number of wholesalers, either through combination with other wholesalers and with jobbers or through business failure.

THE RISE OF LARGE DAIRY CORPORATIONS

Late in the 1920's, large dairy corporations became an important new element in the dairy marketing picture.

The largest butter centralizer, Beatrice Creamery Company, embarked on a diversified program of dairy and poultry products according to the example being set by the two largest dairy corporations, National Dairy Products and Borden. In less than three years it acquired nearly 100 other companies. By 1930, ice cream, fluid milk and cold storage occupied coordinate positions with butter in the company's business, with eggs of somewhat less importance.

Fairmont, the second largest centralizer, also diversified but on a much less extensive scale. This trend toward diversification and territorial expansion was encouraged by the hope for greater stability and earning power which a whole chain of complementary and supplementary relationships made economically desirable. While National Dairy Products' and Borden's primary interest was not (and never had been) butter, they produced or distributed a very large volume in the aggregate by 1930, at which time they ranked among the nation's largest butter distributors.

The meat packers meanwhile were assuming still greater importance in the dairy field, Armour and Swift probably being the largest butter-marketing companies in the United States during 1928-30. The big packers also were very large distributors of cheese, and Armour was manufacturing condensed milk in its two Wisconsin factories.

While the chain stores had been selling rapidly increasing amounts of butter, no one of the five largest chains was producing more than a minor proportion of its butter in its own plants, although the trend toward company manufacture of evaporated milk already was very marked.

Land O'Lakes by 1930 was one of the three largest distributors of butter in the United States, and practically all of its products sold to retail outlets were sold direct through 15 sales branches just established. Challenge, too, was marketing a very large volume of butter direct to retailers. In 1928 the two cooperatives reached a working agreement involving the division of territory so as to eliminate competition between the two cooperative organizations. The

Federal Farm Board approved of this arrangement and two other Pacific Coast regional sales agencies were formed on a similar basis by Washington and Oregon cooperatives.

As a result of these various developments, by 1929 only 39.6 per cent of the country's butter moved through the once-dominant wholesaler-jobber channel. The remainder was distributed through more direct channels integrated as far as the retailer or even the ultimate consumer.

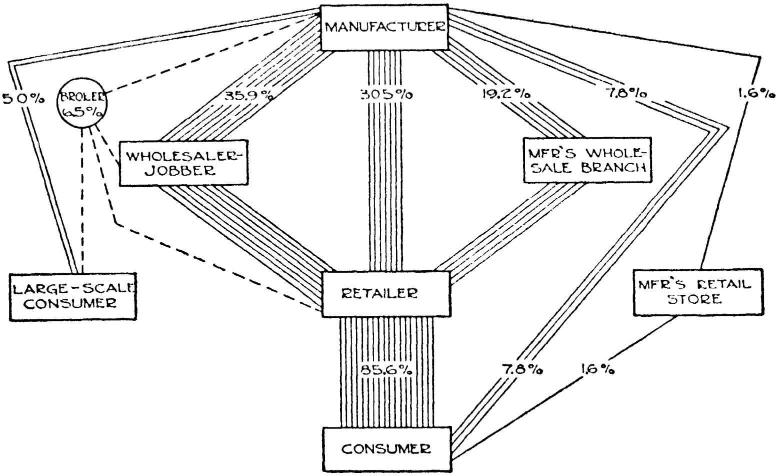

FIG. 50.—Primary channels of butter distribution, 1935. (W. H. Nicholls, *Postwar Developments in the Marketing of Butter,* Iowa Agr. Exp. Sta. Res. Bul. 250, February, 1939.)

Between 1929 and 1935 there was a further decline in the importance of the wholesaler-jobber channel from 39.6 to 35.9 per cent of all butter. The percentages in 1935 are shown in Figure 50. While butter moving through integrated channels to the retailer increased from 47.6 to 54.7 per cent, there was an important shift within this group from "manufacturers' wholesale branches" to a "direct-to-retailer" movement. This indication here is that there has been a decline in the number of sales branches in recent years, and such has certainly been the case for the packers and centralizers, many of whose branch facilities have become unnecessary with improved roads and trucks and the increasing use of chain-store facilities.

By 1936, cooperative federations like Land O'Lakes marketed 30 per cent of the total cooperative creamery production of butter. This was 12 per cent of the total butter produced in the United States.

ECONOMIC APPRAISAL

With the rise of the large cooperative butter sales federations after World War I, considerable numbers of small local creameries were united into large-scale marketing organizations, which were able to take over the functions of assembly, standardization, and quality-improvement, demand creation and selling, and (partly through government aid) financing. Grading and standardization were important factors in making sales-promotion and more integrated marketing possible.

The direct marketing of butter was stimulated also by the rapid growth of chain-store organizations. "Most important of all the advantages which develop from chain organization are those which come through integration, *i.e.*, the combination of the wholesale and retail functions. Through this simplification of functions certain expenses which are usually found in the ordinary wholesaler-to-retailer channel of distribution are eliminated or diminished. . . . The tendency of chain stores to buy farm products at shipping points rather than through jobbers or wholesalers is an important example of the combination of wholesale and retail functions."[3] The chain-store organizations offered a large-scale outlet which made direct-selling far simpler and more economical and, at the same time, integrated their direct-buying systems until they were well prepared to perform the functions of assembly, standardization, storage, financing, and—chiefly through institutional prestige and price appeal—demand creation.

The movement toward more direct marketing raises a fundamental question concerning the relative economies of specialized independent agencies and integrated organizations. The wholesaler's normal function has always been the concentration of butter in the central market by outright purchase in car-lot quantities from local creameries and its sale in smaller lots to jobbers in the same or smaller cities, who disperse the product to suitable retailers. These middlemen perform the services of assembly, standardization, sale, risk-bearing, and financing. They are in close personal touch with the trade where they can offer prompt and frequent deliveries and can watch collections and credit with care.

Specialization and the division of labor led to the establishment of these various types of middlemen. Accordingly, such middlemen are not ordinarily "eliminated"; other agencies are merely substituted to perform the same functions. "The crux of the middleman problem is not whether the middleman shall be eliminated as a middleman, but rather whether marketing can best be performed by independent specialized marketing agencies or by integrated organizations." When integration takes place, specialization is not abandoned. It is merely coordinated by the control of a single management. "Independent agencies endeavor to control their activities in such a manner as to profit from their merchandising operations. When these activities are integrated with production, consumption, or, in the case of middlemen, with the operations of other middlemen, the integrating party endeavors to control the operations so as to forward its own primary activities."[4]

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[3] Fred E. Clark and L. D. H. Weld, *Marketing Agricultural Products*, p. 175, MacMillan, 1933.

The choice between direct marketing and the use of independent agencies is basically a matter of cost. The cost must not be so far increased by the process of integration as to offset the advantages gained. There is evidence of a decrease in the number of old-line wholesale houses, through failure or merger. But quantitative data are not available to show what the net change in cost has been.

Thus the butter wholesaler-jobber's functions of assembly, standardization, demand creation, financing, and risk-bearing all tended to be gradually taken over with the rapid spread of integration during the inter-war period. The increase in numbers and size of large-scale organizations made demand creation possible and desirable. These organizations assume the burdens of physical distribution, financing, and risk-bearing into their own integrated systems, thus eliminating any further dependence upon the old-line agencies.

Wholesalers and jobbers of butter, however, still have a significant function to perform in the marketing process. There will continue to be a need for the highly selective services of wholesaler-jobbers in best satisfying the peculiar or highly discriminating tastes of relatively small groups of people who fail to conform at all closely to the less discriminating "average" taste to which the packers, centralizers, and chain-stores have chiefly appealed. Furthermore, wholesaler-jobbers will have a continued demand for their old functions—including even standardization—from that large number of scattered unfederated local creameries throughout the country which still depend on the longer route for their only outlet.

The costs of marketing butter through the two channels—the wholesaler-jobber-retailer route, and the integrated chain store route—have been compared by the Federal Trade Commission.[5] The data are not conclusive, for the chain store costs are computed from data from only two chain stores. But such as they are, they are given in Table 29. They show considerably lower costs for the chain store route than for the regular wholesale channel.

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[4] Fred E. Clark, *Principles of Marketing*, MacMillan, 1922, pp. 283–84.

TABLE 29

RETAIL PRICES OF BUTTER, AND MANUFACTURERS' AND DISTRIBUTORS' GROSS MARGINS, 1934

	Butter Distributed Through Usual Wholesale-Jobber-Retail Channels		Butter Distributed (all grades) by 2 Retail Grocery Chains	
	Cents	*Percentage*	*Cents*	*Percentage*
Average retail price... ...	31.5*	100.0	27.68	100.0
Distributors' average gross margin.	8.05	25.6	2.44	8.82
Manufacturers' average gross margin	5.00	15.8	6.79	24.53
Average price to producers for butterfat required for 1 pound of butter	18.45†	58.6	18.45†	66.65

* Average retail price of butter (92 score or better) in 51 cities, as reported to the Bureau of Labor Statistics, USDL.

† Farm price of butterfat in the United States, as reported by the BAE, USDA.

It remains to be seen if the movement toward direct marketing has been carried further than is economically sound, all costs and gains considered. One large cooperative marketing organization has started using a private distributional agency once more for part of its product, and certain chain stores are reported to be turning back somewhat to open-market purchases of butter again, cutting down correspondingly the scale of their direct country-buying programs. The report of the federal trade commission gives annual rates of return on total investment for 10 leading dairy corporations as well as for 12 leading butter wholesalers for the period 1929-34.[6] According to the commission's data, the dairy corporations had an average rate of return of 14.1 per cent compared with an average *loss* of 0.4 per cent for the wholesalers in the three years, 1929–31. For 1932–34, however, the wholesalers were in a much better relative position, with a return of 11.0 per cent compared with 5.12 per cent for the dairy corporations. In 1935 the wholesalers had an average return of 13.9 per cent, while the dairy corporations (five companies only) received only 6.83 per cent. While the business of the dairy corporations is by no means limited to butter, these data possibly indicate that the butter wholesalers—perhaps now becoming reorganized on a sounder basis—are assuming a somewhat more favorable position relative to the direct-marketing agencies once again. It is possible that the next few years will show a swing of the pendulum back toward the wholesaler. But if so it will probably be toward a type of wholesaler who has better adapted the scope of his functions and services to the requirements of the recent developments in the marketing picture—not merely toward the same unchanged wholesaler of old.

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[5] U. S. Federal Trade Commission, *Agricultural Income Inquiry, Part I, Principal Farm Products,* p. 193, 1937.

[6] U. S. Federal Trade Commission, *Agricultural Income Inquiry, Part I,* Tables 178, 181. 1938. pp. 853–58.

CHAPTER 19.

Reducing Milk Marketing Costs

The importance of milk as a food in the American diet is shown by the fact that in 1935–39, fluid milk took 8.5 per cent of the average consumer's food budget. (Condensed and evaporated milk took an additional 1 per cent.) Milk thus took a larger share than any other foods but pork and beef; each of those took about 11 per cent.[1] Consumers spent slightly more for milk than for all other dairy products combined.

On the average, it costs almost as much to distribute milk as it

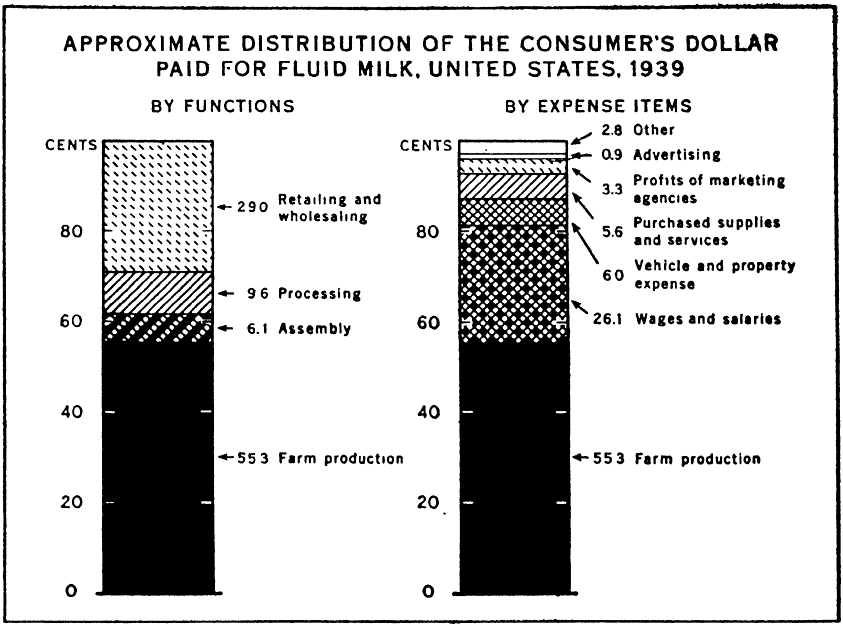

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Fig. 51.—The producer received about 55 per cent of the consumer's dollar paid for milk in 1939. Of the other 45 per cent, costs of assembly account for about 6 per cent, processing about 10 per cent, and retailing and wholesaling about 29 per cent.

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[1] *Price Spreads Between Farmers and Consumers for Food Products 1913–14,* Misc. Pub. No. 576, USDA, BAE, September, 1945, p. 10.

does to produce it. In 1939, the last "normal" pre-war year, the average retail price of fluid milk in the United States was 11.4 cents per quart. The farmer got 6.3 cents of this, and the distributor got 5.1 cents. Further detail is shown in Figure 51.

During the recent war, the prices paid to milk producers rose more than 50 per cent over 1940 levels in many areas, and the earnings of labor engaged in marketing milk rose from 50 to 100 per cent. The prices of milk to consumers, however, were held down by ceilings, and rose very little. This was made possible by reductions in some marketing services (such as the change from daily to alternate-day delivery) and other war-time measures, and by subsidies to milk distributors in 13 urban areas. Substantial subsidies, ranging from about 0.6 cents to about 1.9 cents per quart also were paid to producers.[2] These producer subsidies did not affect distributors' margins and prices, directly, but had the effect of increasing milk production.

Now that peace has returned, distributors may return to their pre-war peace time services. If this happens, either the price of milk to consumers will have to be raised, the price to farmers will have to be lowered, or more efficient methods of distribution will have to be worked out so as to reduce the costs of milk distribution.

Attention will be focused here upon reducing the costs of distribution. There are several specific means by which this objective can be attained.

DELIVERY ON ALTERNATE DAYS

Alternate-day delivery of milk was instituted as a wartime measure following an ODT order, effective June 1, 1942, requiring that each retail business reduce delivery mileage 25 per cent. The purpose of this order was to reduce the use of trucks, tires, and gasoline in retail deliveries. Alternate-day deliveries of milk were brought about by state or municipal action, milk control board rulings, and voluntary action by dealers. Probably two-thirds of all retail deliveries were on this basis.[3] The ODT order remained in effect until November 1, 1945.

Studies conducted in a number of milk markets show that this order effected marked savings in the use of delivery equipment.

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[2] *Federal Register,* November 4, 1943, p. 14,999; January 25, 1944, p. 867; May 13, 1944, p. 5,099; October 27, 1944, p. 12,905.

[3] R. G. Bressler, Jr., E. O. Anderson, D. A. Clarke, Jr., E. N. Bilenker, *Efficiency of Milk Marketing in Connecticut. 5. Economics and Biology of Alternate-Day Milk Delivery,* Storrs Agr. Exp. Sta. Bul. 247, May, 1943, p. 5.

The saving in mileage represented a substantial contribution to the war effort. The greatest gain in the efficiency of distribution, however, came from increasing the amount of milk that a driver could deliver in a working day.

How much did alternate-day delivery reduce costs in terms of cents per quart?

It was estimated in 1944 that in Boston "a return to daily delivery under present conditions of wages and other costs would require an increase in the selling price of milk of at least one cent per quart."[4] A recent study of the Portland, Me., area indicates that the combined effect on labor and motor truck costs of a return to daily delivery, under existing wage rates, would result in an increased cost of at least one cent per quart of milk.[5] Leland Spencer estimates that a return to daily deliveries would increase costs in the New York metropolitan area about 1.3 cents per quart.[6]

Most consumers seem willing to continue alternate day delivery, if it would mean a lower price for milk. Distributors' reactions are more mixed. The great majority of milk distributors in New York City have expressed a desire to continue alternate-day delivery under peace time conditions. They anticipate that wage and other costs will be higher after the war than they were before, and are anxious to offset them by such measures as delivery on alternate days. They consider, however, that competition for business will bring back every-day delivery unless some form of state or federal regulation is used.[7]

Dealers in Vermont were divided about 50-50 on the desirability of continuing alternate-day delivery.[8] "A few opposed continuation of alternate-day delivery on the ground that violations and abuses already existed, and some stated that alternate-day delivery had failed to effect economies in distribution. Some based their opposition largely on their belief that each dealer should have the right to do as he wished; they were opposed to the present government controls and felt that these might be continued. As one expressed it, 'This order was a war measure to save gas, tires, and labor. After the war are we going to be under a dictator or are we going to have a mind of our own and run our own business as we see fit? I am certainly not in favor of this restriction. If I see where it is better for me to deliver milk every-other-day, all right. It might be better for some other dealer to deliver every day. What is that to the government or anyone else?'

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[4] Ezra Merrill. 1944. *Marketing Efficiencies in City Operations That Should Become a Part of Our Post-War Economy.* Twenty-Third Short Course Conference and Annual Meeting, Vermont Dairy Plant Operators and Managers, 1944, p. 60. Dept. Anim. and Dairy Husb., Univ. of Vermont and State Agr. Coll.

[5] George F. Dow. 1945. *Size of Loads and Delivery Costs for Labor in Milk Distribution in Boston and Portland.* Maine Agr. Exp. Sta. Bul. 437, p. 486.

These sources are quoted by Thurston M. Adams, *Wartime Changes in Milk Distribution and in the Consumption of Milk, Cream, Butter, and Oleomargarine in Vermont,* Vermont Agr. Exp. Sta. Bul. 527, Univ. of Vermont and State Agr. Coll., October, 1945, p. 4.

[6] Leland Spencer, *Wartime Economies in Milk Delivery,* Dept. of Agr. Econ., Cornell Univ. Agr. Exp. Sta., N. Y., Mimeo. Bul. AE. 528-A, September, 1945, p. 5.

[7] Leland Spencer, *Views of New York Milk Distributors Concerning Continuation of Wartime Limitations on Delivery Services After the War Ends,* Mimeo. Bul. AE. 508, Cornell Univ. Agr. Exp. Sta., January 30, 1945.

[8] Thurston M. Adams, *Wartime Changes in Milk Distribution and in the Consumption of Milk, Cream, Butter, and Oleomargarine in Vermont,* Vermont Agr. Exp. Sta. Bul. 527, Univ. of Vermont and State Agr. Coll., October, 1945, p. 11.

"Dealers favoring continuation indicated a general willingness to attempt it on a voluntary basis when and if government controls are removed. Of those giving an unqualified answer, 91 per cent indicated a willingness to make the attempt. However, only about half of them believed that the dealers in their area would be able to continue successfully on an every-other-day delivery basis without some sort of controls by government. Perhaps it is significant that even in Burlington and Rutland, where the dealers were practically unanimous in their conviction that this wartime economy should be continued, less than one-sixth of those reporting believed that continuation on a voluntary basis would be successful."

It seems probable that alternate-day delivery will be abandoned in most markets under the pressure of competition unless specific arrangements are set up to continue it. These arrangements probably would need to be enforced by state or federal regulation.

REORGANIZATION OF ROUTES

The overlapping and duplication of routes that is usually found in milk delivery is another feature of milk distribution that keeps costs high.

It was shown in the preceding chapter that reorganizing butterfat collection routes would save about one cent a pound in butterfat collection costs. Reorganizing milk delivery routes would result in considerably greater reductions in milk distribution costs. The extent of the savings that could be effected, according to a study made in Connecticut, is shown below.

SUMMARY FOR MAJOR CONNECTICUT MARKETS[9]

"In the period prior to the war, milk delivery trucks in Hartford traveled more than 5,000 miles per day in an area with only 184 miles of city streets. Alternate-day delivery and the elimination of special deliveries reduced truck travel to approximately 3,000 miles per day. While this was an important reduction, route mileages remained far in excess of those that would have been required under a more rational system. If the city were divided into exclusive delivery areas with one dealer assigned to each area, daily delivery could have been made with only 500 miles and alternate-day delivery with only 334 miles of route travel. If all deliveries were made from a single, centrally located plant (public utility), route miles would be slightly higher than those for exclusive territories because of the increased average length of haul.

"Conditions in the New Haven metropolitan milk market resembled those in Hartford. Under . . . [the wartime] . . . system, daily delivery in the seven towns constituting the metropolitan milk market required more than 9,000 route miles per day. Alternate-day delivery reduced this to some 5,000 miles. These distances were traveled in an area with 700 miles of streets, so route duplication was obviously important. A system of exclusive delivery territories would permit daily delivery with less than 1,600 miles and alternate-day delivery with less than 1,100 miles. Even if two dealers were permitted to serve each area, daily deliveries in the seven-town district would have been possible with less than 2,700 route miles while alternate-day delivery would have required less than 1,800 route miles per day. In the city of New Haven alone, daily delivery required 5,900 miles and alternate-day delivery 3,500 miles. Exclusive territories would reduce these to 750 and 520 miles, respectively.

"In order to protect both consumers and milk dealers, any method of making the delivery system completely rational would require extensive public regulation. Moreover, many dealers and consumers would be reluctant to accept such programs and would participate only if required to do so. It might be possible, however, to interest a limited group in a voluntary program. Studies of the operations of nine New Haven dealers who deliver about 80 per cent of all milk in the market indicate that their present route mileages could be reduced 75 to 80 per cent through allocated territories. Three small dealers handling less than 5 per cent of the market total could reduce their present mileages more than 40 per cent by exchanging 30 per cent of their customers and thereby eliminating the duplication of their routes.

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[9] R. G. Bressler, Jr., D. A. Clarke, Jr., and S. K. Seaver, *Efficiency of Milk Marketing in Connecticut, 9. Conservation Possibilities in Retail Delivery in Major Markets,* Storrs Agr. Exp. Sta. Bul. 253, 1944, pp. 39–42.

"Volume and density descriptions for the eight towns in Connecticut that had densities in excess of 120 quarts per mile of street in 1940 are given in Table 30. Estimates of milk delivery mileages under the present system and under exclusive delivery territories also are included. For the eight markets as a group, daily delivery required nearly 26,000 miles of route travel. Alternate-day delivery reduced this to 16,000 miles, a saving of 37 per cent. If these markets were zoned and exclusive delivery territories assigned to each dealer, it is estimated that daily deliveries could be made with 3,400 miles and alternate-day deliveries with 2,400 miles. Alternate-day operations in exclusive delivery areas would thus make it possible to reduce present daily delivery mileages by more than 90 per cent and present alternate-day mileages by 85 per cent."

TABLE 30

ESTIMATES OF PRESENT AND REORGANIZED MILK DELIVERY MILEAGES FOR RURAL, SECONDARY, AND MAJOR MARKETS IN CONNECTICUT

Type of Market	Number of Towns	Daily Quarts*	Estimated Delivery Miles Per Day: Present: Every Day	Present: Every-other-day	Exclusive Territories: Every Day	Exclusive Territories: Every-other-day
Rural.. ..	125	68,624	9,641	5,338	5,921	3,496
Secondary.	36	209,667	25,738	15,406	6,711	4,577
Major......	8	238,363	25,710	16,210	3,420	2,360
Total...	169	516,654	61,089	36,954	16,052	10,433
Percentage of present daily miles			100	60	26	17

* Based on 1940 records of the Connecticut Milk Administrator.

The data for the rural and secondary markets in Connecticut, and the totals for all markets, also are shown in Table 30.

How much would reorganization of this thorough-going character reduce milk marketing costs?

A study of this question in the secondary markets of Connecticut led the investigators to the startling conclusion that costs would be cut by amounts ranging from 2.2 to 3.5 cents, depending upon the wage arrangements made with drivers and dealers.[10]

SALES THROUGH STORES

Another way to reduce the cost of distributing milk is to sell it through stores instead of delivering it to the consumer's doorstep.

A marked increase in sales of milk through stores has been taking place in the large cities of the United States during the past 10 or 20 years. In 1930, 85 per cent of the milk sold in Chicago was delivered to homes. By 1941, this figure had dropped to 28 per cent—a striking change indeed.

This change was probably accelerated by the drastic decline in consumer incomes that took place during the early 1930's. This led consumers to pay more attention to the savings that could be made by buying milk at stores. Between 1935 and 1940, the differential between the price at stores and for home delivery in Chicago ranged from one cent to 4.5 cents per quart. In September, 1941, the store price was 13 cents per quart, while the price per quart for home deliveries, even after the inclusion of the quantity discounts, averaged (weighted) 14.85 cents. Thus the differential between the two was nearly 2 cents per quart.

Apparently, these differentials in prices were about in line with differentials in costs. The costs in September, 1941, were:[11]

Costs	Cents per Quart
Producer price	6.10
Receiving station	0.20
Transportation to city	0.25
Processing	1.40
Administration	0.25
Basic costs	8.20

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[10] "Under such reorganized conditions, it would be reasonable to expect that milk distribution costs would be reduced. It seems probable that city plant operations could be covered by 1.0 cents per quart, administrative costs 0.5 cents, truck expense 0.3 cents, miscellaneous route costs 0.4 cents, and route labor from 1.3 to 2.6 cents per quart. The range in route labor costs reflects the impossibility of forecasting the types of wage arrangements that would be acceptable to drivers and dealers under the revised conditions. Total costs of city distribution would thus average between 3.5 and 4.8 cents per quart, compared with the present margin of more than seven cents." (S. K. Seaver and R. G. Bressler, Jr., *Efficiency of Milk Marketing in Connecticut. 8. Possible Milk Delivery Economies in Secondary Markets,* Storrs Agr. Exp. Sta. Bul. 252, Univ. of Connecticut, May, 1944, p. 46.)

[11] R. W. Bartlett, "Suggested Ways for Lowering Costs of Milk Distribution in Chicago." *Illinois Farm Economics,* Dept. of Agr. Econ., Univ. of Illinois, No. 80, January, 1942, p. 197.

Additional costs incurred for selling and delivery:

	Home Delivery	Store
Labor	3.82	1.60
Vehicle and other	.94	.24
Store charge		1.00
Miscellaneous	.50	.50
Total, all costs	13.46	11.54

The differences between these costs and the prices of 13 cents and 14.85 cents represented the dealers' profit. The differences are both about 1.4 cents.[12]

A similar decrease in deliveries of milk to consumers has been taking place in New York. In 1938, 47 per cent of milk sales directly to consumers in New York was delivered to homes.[13] By 1942, the percentage had declined to 34 per cent. The price of the delivered milk then was 16.9 cents for one quart and 15.6 cents per quart for two quarts. The store price per quart was 12.5 cents,[14] a substantial amount (3.1 cents) below even the lower of the two delivered prices just given.

California markets are among the top markets in the country for proportion of milk sales through stores. By 1941 Los Angeles, San Diego, and other markets were served through wholesale outlets for more than 60 per cent of their volume; in San Francisco wholesale outlets took more than 75 per cent. In these markets the chain stores have seized upon milk as a preferred article for trade. An accompanying development of particular significance was specialization among distributors, some taking on wholesale trade exclusively, others operating mainly retail delivery routes.[15]

In more than half of the markets of the country for which prices were quoted in June, 1944, by the United States Department of Agriculture, store milk was priced lower than that delivered to the doorstep. In two-thirds of these markets the differential was a cent per quart, but in some of the larger markets it was as much as three cents. In these larger markets the differentials were high because of the relatively large amount of labor needed for doorstep delivery on the one hand, and the low costs of delivering milk in stores made possible by a large volume of store sales, on the other.

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[12] This 1.4 cents is considerably higher than the average profits of milk dealers shown in Figure 51 for 1939. That figure shows an average profit of 3.3 per cent, which amounted to 0.4 cents per quart. Another study, made by the Bureau of Business Research of Indiana University, reached a similar conclusion. It showed average profits for milk distributors in the United States in 1944 of 0.3 cents per quart. (Reported in the *Des Moines Sunday Register,* Iowa Farm Page, October 7, 1945).

[13] Charles J. Blanford, *The Demand for Milk and Cream as Revealed by Consumer Purchases at Retail Food Stores in New York City,* Cornell Univ. Agr. Exp. Sta. Bul. 765, June, 1941, p. 4.

[14] Estimates made by Stewart Johnson and Leland Spencer, Dept. of Agr. Econ,. Cornell Univ., in a letter dated February 29, 1944, to Anthony Mathis.

[15] Louis F. Herrmann and William C. Welden, *Pre-War Developments in Milk Distribution,* Farm Credit Administration, USDA, Misc. Rpt. No. 62, November,

QUANTITY DISCOUNTS

Another way by which the cost of milk to consumers can be reduced is the use of discounts in price for large quantities of milk per delivery. This method has been adopted in a considerable number of cities.

Minneapolis.[16] The Northland Milk and Ice Cream Company, whose president is E. S. Elwell, handles 40 per cent of the fluid milk sold in Minneapolis. In December, 1937, this company initiated a milk price plan based on the idea that the delivery of several quarts at a time costs little more than the delivery of a single quart.[17] The plan was named the "Elwell plan."

The new schedule of prices was based on a flat 3-cent delivery charge which was made on each purchase, regardless of size. This schedule of prices was outlined in a table as follows:

TABLE 31

THE ELWELL SYSTEM OF QUANTITY DISCOUNTS

(Cents per quart)

Item	New Price	Delivery Charge	Total New Price	Present Price	Your Saving
1 quart . .	9	3	12	11	− 1
2 quarts.	18	3	21	22	1
3 quarts. . . .	27	3	30	33	3
4 quarts. . . .	36	3	39	44	5
5 quarts.	45	3	48	55	7
1 quart milk, 1 quart buttermilk and ½ pint of cream.	24	3	27	30	3

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[16] *Business Week,* January 1, 1938, pp. 29–30.

[17] The advertisement in Minneapolis papers which revealed the new plan made the following claim: "If each customer on each of our milk routes paid a 3-cent delivery charge each time a purchase was made, we could sell milk at a profit for 9 cents (per quart) and cream for 10 cents (per ½ pint)."

St. Louis. The sale of milk in gallon containers was first introduced into St. Louis at the plant stores of small dealers in 1935. A shift of sales from home delivery routes started, and to meet it other distributors began to offer gallon jugs of milk in home delivery. Early in 1938 the gallon jug had become common throughout the market. A year later the half-gallon bottle was being offered in substantial quantities. By July, 1944, 36.3 per cent of all the milk sold from retail routes in St. Louis was in multiple-quart containers. Sales from plant stores and to grocery stores amounted to an additional 6.7 per cent. The major part of the increase occurred at the expense of sales in single quarts, which dropped from 82 per cent of the volume in 1937 to 47.2 per cent in 1941.[18]

In November, 1945, milk in gallon containers sold at 50 to 58 cents in stores and 58 cents on routes. This was 0.5 to 1.5 cents per quart below the announced prices of milk in single quarts. The half-gallon containers were priced at 26 to 30 cents in stores and 30 cents for home-deliveries; this was from 0.5 to 2.5 cents per quart below the single quart price.[19]

New York.[20] On November 8, 1939, Borden's Farm Products Division and Sheffield Farms Company, Inc., announced through the newspapers that they would introduce retail milk delivery to homes in 2-quart paper containers at one and one-half cents per quart below prevailing prices for single quarts in glass bottles. Concurrently, home-delivery prices per quart in glass bottles were raised from 14.75 to 15 cents for Grade B and from 17.75 to 18 cents for Grade A milk.

The plan previously had been tried out in Rockland City, New York. There 85 per cent of retail customers had immediately expressed a preference for the 2-quart paper container under a 2-cent per quart below the single-quart price. Within 30 days the remaining 15 per cent of customers were converted, giving 100 per cent consumer acceptance.

A later study showed that dealers in New York City using 2-quart paper containers had a steady increase in sales. Their territory gradually had been expanded, and conversions from glass to paper had increased. Dealers thought that converting customers from glass to paper was a gradual process and required some education.[21] These dealers felt that they themselves, drivers, consumers, and producers were benefiting from retailing of milk in 2-quart containers. Those New York dealers who had gone in for discounts on multiple-quart purchases sold in the regular 1-quart glass bottle were likewise gratified with their experiences.

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[18] Louis F. Herrmann and William C. Welden, *Pre-War Developments in Milk Distribution,* Farm Credit Administration, USDA, Misc. Rpt. No. 62, November, 1942, p. 3; and *Milk Market Information, St. Louis Marketing Area, 1934–1944,* Federal Milk Market Administrator, Mimeo., p. 38.

[19] *Fluid Milk Prices in City Markets, For November, 1945,* USDA, BAE., Mimeo.

[20] American Produce Review 89, pp. 88–89, November 22, 1939. See also *Sheffield Farms Introduce Two-Quart Containers on Retail Routes in New York,* Milk Dealer 29, November, 1939. pp. 41–42.

Chicago. Chicago milk distributors who started using 2-quart and 4-quart glass containers with quantity discounts in February, 1940, likewise reported sales increases gradually.

Their competitors, however, were loath to lose either store or home-delivery trade to the dealers who used multiple-quart containers. As a result they reduced prices on single quarts, inaugurated quantity discounts, and introduced sliding scale prices. Smaller firms followed the lead of large firms in introducing the multiple quart container, and in some cases gave even greater quantity discounts.

Nearly all major distributors using multiple quart containers with quantity discounts reported sale increases, but could not determine how much of the increase was due to increased consumption, business converted from stores to retail routes, or new stops gained from competitive routes. Some New York and Chicago companies reported gains as high as 25 and 30 per cent.

PAPER CONTAINERS

Another recent development in milk distribution has been the increased use of paper containers.

In the early days of the dairy industry, milk was distributed from door to door in bulk by the dairy farmer. He would fill the crocks or pails that the housewife left on the door step from the milk cans that he carried in his milk wagon or cart.

This method of distribution was used until Thatcher developed glass milk bottles in 1879. These speedily found favor in housewives' and distributors' eyes. Being transparent, the bottles clearly revealed the cream line. Being filled and capped at the plant, they were more sanitary than bulk milk. Moreover, they were relatively cheap because they were washable and could be used many times over.

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[21] *American Milk Review* 2, February, 1940. pp. 32–33.

In 1906, G. W. Maxwell of San Francisco developed a paper container for milk. Little use was made of paper containers, however, until about the middle 1930's. Since that time their use has spread rapidly, especially in the store trade. They relieve the storekeeper of the chore of handling empty bottles, and of charging and refunding consumers for them. They permit distributors to carry more milk both because they weigh less than glass bottles, and because they take up less space. For instance, a 12 bottle case of milk in glass containers weighs 61.5 pounds; a similar case of milk in paper weighs only 32.5 pounds. A truck of 1.5 tons capacity can carry 120 cases of milk in glass; but it can carry 300 cases in paper.[22] They also require less refrigeration, and use less refrigerator space than glass bottles. The majority of consumers like them too.[23] They require no washing, and do not have to be returned.

Paper containers have some disadvantages. They are not transparent, and consumers cannot see the cream line. (This objection is less important with homogenized milk, where there is no cream line to see). Since they are only used once, the container cost of milk sold in paper is higher than that of milk sold in the returnable glass bottles. Some types of paper bottles require special filling equipment; these require the distributor to make new capital investment.

Usually the plant processing costs per quart of milk distributed, which include pasteurizing, bottle washing and filling, etc., are higher for milk handled in paper containers than for milk in glass bottles, because the cost of the paper containers generally is greater than the economies that they permit in the plant. However, the *delivery* costs per quart of milk in paper generally are lower than in glass because a larger amount of milk can be handled per truck, and truck refrigeration is not required. In stores, milk is handled more cheaply in paper containers than in glass, because less refrigerator space and refrigeration is necessary and no bottle returns or deposits are required.

About 12 per cent of bottled milk sold in the United States in the fall quarter of 1943 was put up in paper containers. The proportion ranged from 56 per cent of all sales in Los Angeles and 40 per cent in New York to zero in many small markets which still use glass bottles only. With the exception of Los Angeles and New York, paper containers are used chiefly in the distribution of milk through stores.[24]

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[22] Howard B. Selby, General Manager, United Farmers' Dairy, Boston, Mass., *Pure-Pak News.* Mich. Vol. 3, No. 1, January, 1940, p. 142.

[23] Studies conducted by P. H. Tracy of the University of Illinois showed that once consumers got accustomed to paper containers, from 91 to 95 per cent of the consumers preferred them to glass bottles. (P. H. Tracy, *How 231 Consumers Reacted to the Use of Paper Containers,* abstract of paper given at the Milk Marketing Conference, January 7, 1941, Univ. of Illinois Agr. Econ. Dept. Mimeo. AE. 1585, pp. 16–19.)

Milk in paper containers at stores in many markets used to be priced about a cent higher than milk in glass bottles.[25] More recently, the two have been selling at the same price. There is some evidence now that when all items of cost are taken into account, milk can be distributed to stores in paper containers at as low a cost or at a lower cost than in glass bottles. Leland Spencer found that in New Jersey, "The dealers' costs applicable to store milk delivered in paper containers on retail routes were about one cent a quart less than the comparable costs for milk delivered in bottles."[26]

Other sources report smaller differences in costs than this. R. C. Sneed, in charge of milk plant operations, Safeway Stores, Oakland, California, showed costs in paper from 0.1 to 0.2 cents per quart lower than in glass.[27]

"Costs for distributing milk in paper bottles by Dairy Sealed, Inc., of New York City, a subsidiary of the Borden Company, were filed at a hearing before the New York State Milk Control Board in May, 1936. Total costs of wholesale distribution for January to March, 1936, as shown by this record, averaged 3.24 cents per quart. This was about three-fifths of a cent a quart less than costs of distributing milk in glass bottles, as shown in the New York cost study made six months earlier."[28]

A nation-wide study conducted by R. W. Bartlett in 1943 and

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[24] R. W. Bartlett, "What About the Paper Bottle?" *Methods of Expanding Outlets for Market Milk*, Bartlett Foundation, Inc., 631 East Green Street, Chicago, Ill., BF—10, July, 1945, Mimeo.

[25] Charles J. Blanford, *The Demand for Milk and Cream as Revealed by Consumer Purchases at Retail Food Stores in New York*, Cornell Univ. Agr. Exp. Sta. Bul. 765, 1941, p. 33; "Paper Bottle Up-Charge Illegal; Virginia Supreme Court Denies State Milk Commission Right to Place Up-Charge on Paper Milk Containers," *Pure-Pak News*, Vol 7, No. 4, April, 1944, pp. 1–4; and "Paper Milk Containers Win Price Parity With Glass Bottles in Massachusetts," *Advance Sheets, Opinion of the Supreme Judicial Court*, Wright and Potter Printing Co., Boston. Both of these two items are quoted in Bartlett, *op. cit.*

[26] *Cost of Distributing Milk in New Jersey*, New Jersey Dept. of Agr., May, 1943, p. 58.

[27] R. W. Bartlett, Abstract of paper given at the Milk Marketing Conference February 3, 1942. Univ. of Illinois Agr. Econ. Dept. Mimeo. AE–1821, pp. 6–9.

[28] R. W. Bartlett, Abstract of paper given at Dairy Manufactures Short Course, November 17–20, 1937. Univ. of Illinois Agr. Econ. Dept. Mimeo. AE–693, pp. 215–18.

1944 indicated that (1) the efficiency of the individual plants seemed to be more important than the type of container used, (2) wholesale plants selling milk exclusively in paper containers handled milk as efficiently, if not more so, than such plants using glass bottles exclusively, and (3) the introduction of paper operations in a plant already bottling milk in glass containers resulted in high costs for milk in paper containers.[29]

The glass bottle industry has recognized the space- and weight-saving advantages of paper containers. Its answer to the competition of paper has been the square milk bottle.

The square milk bottle saves space—about 33 per cent in plant refrigerators, up to 50 per cent in home and grocery refrigerators, and a substantial amount in trucks. A case of these new-type bottles weighs about 15 per cent less than a case of round bottles.[30]

Although the savings in weight are not as great as those of paper containers, the square milk bottle retains the advantages of glass containers: low container cost per unit of milk sold, transparency, and the fact that they can be used with existing plant equipment. It also retains some of the disadvantages of round glass bottles—the need for bottle washing and storage, and for bottle deposits and returns.

Square milk bottles are not widely used, but they are being adopted by a number of dealers, and appear to be satisfactory to consumers.

ORGANIZATION FOR INSTITUTING LOW-COST METHODS

The preceding pages have shown first, that the costs of milk distribution take about 45 per cent of the consumers' dollar spent for milk, and second, that there are several methods by which the costs of distributing milk can be reduced substantially.

How can these low cost methods be brought into wider use?

If milk distribution were freely competitive, most of these low cost methods would already be in general use. But for reasons given in Chapter 13, milk distribution is monopolistic in character. The problem of reducing milk distribution costs really resolves itself into a choice between two alternatives: Is it possible to make milk distribution more competitive, so that competition will reduce costs? Or is milk distribution so inherently monopolistic that it is necessary to bring it under public utility regulation or some other form of public control?

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[29] *Statement of Facts Presented By Safeway Stores, Inc., and Lucerne Cream & Butter Co.,* before E .L. Peterson, Director of Oregon State Dept. Agr., Mimeo. May 15, 1945.

[30] J. I. Daley, Emmadine Farms, Inc., "Experience With Square Milk Bottles," *The Dairy World,* Dearborn Trade Journal Co., 608 So. Dearborn Street, Chicago 5, Ill. Vol. 23, No. 8, January, 1945, pp. 8–12 and 52–53.

On this question, the authorities disagree. As shown later in this chapter, Bartlett favors removing all barriers and letting competition keep costs low. Mortenson believes that this cannot be done, and favors bringing milk distribution under public utility regulation. Tinley differs from Bartlett; he has stated his views thus:[31]

"All things considered, the fluid-milk-distributing industries of our various cities are probably no more inefficient—in many ways perhaps more efficient—than most other industries involving processing and distribution. Because of the vital importance of the product handled, however, it is logical for the general public to expect that every effort should be made to eliminate inefficiencies in fluid-milk distribution, even though they may be tolerated in other industries. With this most enlightened distributors would agree.

"Many people believe that inefficiency in distribution is only a passing phase; that competition will eventually eliminate inefficient practices and inefficient firms. A study of classical economic doctrines, which are supposed to characterize our American economy, indicates that among others, the functions and results of free competition are: (1) to insure that each industry is supplied, over a period of time, with sufficient (but not greatly more than sufficient) capital to meet the requirements of that industry for productive facilities and for current operating expenses, (2) that inefficient practices and firms will be eliminated gradually but surely, and (3) that the benefits of increased efficiency will be passed on to consumers in the form of lower prices.

"Undoubtedly, if our economy were operating under conditions of relatively free competition, these results, beneficial from a general-welfare standpoint, would be forthcoming. Unfortunately, however, it is generally recognized that while the corrective forces of fundamental economic laws still prevail in the long run, maladjustments and inefficiencies may persist for considerable periods of time, in spite of intensive competitive conditions. For example, in most California cities, there were in 1938 more plants distributing about the same or even a smaller total volume of milk than in 1929. Intensive competition since 1930 has not only failed to correct the situation, but has in many ways tended to result in the introduction of numerous expensive trade practices. The elimination of these practices alone would probably result in material reductions in the cost of distributing fluid milk.

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[31] J. M. Tinley, "Reducing Cost of Distributing Milk in California," *Journal of Farm Economics*, The American Farm Economic Association, Vol. XXI, No. 1, February, 1939. pp. 299–300.

"Perhaps, if competition were permitted to run its course, these conditions would eventually be corrected. Meanwhile, however, consumers would have to face the danger of periodic cessations of supply as a result of strikes. Equipment in plants would deteriorate rapidly, and high sanitary standards would be increasingly difficult to maintain. Furthermore, it is quite likely that after the situation has been corrected, the same influences would again be set in motion to cause another protracted collapse of milk-marketing structures. It is difficult to escape the conclusion that competition cannot be relied upon to insure efficiency in fluid-milk distribution unless radical changes are made in the functioning of our economy as a whole. Even then the question arises whether fluid-milk distribution, in the present advanced stage of development, is an industry that can operate efficiently under freely competitive conditions or is one that should be regarded as a natural monopoly. It is significant that in most of our larger markets the quality of the product, because of stringent health regulations, does not vary greatly as between distributors, that processing and delivery techniques are highly standardized, and that there are apparently definite benefits from large-scale operation.

"Whatever conclusion is arrived at, it is apparent that some new technique must be developed to insure (1) that the fluid-milk-distributing industries of our various cities are not oversupplied with capital and (2) that these industries operate with the maximum efficiency measured in terms of unit costs of distribution. Possibly the milk-distribution industry can develop the necessary techniques on a voluntary basis with or without government assistance. If milk distributors are unable to cooperate for this purpose, we can look forward to more and more public regulation in the future."

Bartlett takes quite a different point of view. He believes that the result of what Tinley calls "intensive competition" in California between 1930 and 1938 was not the result of competition at all. He considers that milk distribution margins in many markets are frozen at high levels by various monopoly factors. In some states milk control boards set resale (retail) prices. In setting retail prices, milk control boards often are strongly influenced by milk distributors, who naturally are interested in wide margins. In other cases trade associations or the dominating influence of large distributors over smaller dealers are strong enough to maintain high consumer prices and wide margins by ruling competitive practices out of the market.

Washington, D. C., is a good example of a market where competitive forces have been given comparatively free rein. Low-cost milk distribution by chain stores operating their own milk plants has been an important factor there in forcing low consumer prices for milk sold through competitive stores. As a result a wide differential prevails between the price of milk at stores and the price of home-delivered milk.

In October, 1945, Washington milk dealers paid farmers 9.1 cents per quart for milk; consumers paid 15 cents per quart for milk delivered to homes, and 12 cents per quart, or 23 cents for 2 quarts, at stores. Milk dealers were getting 0.6 cents per quart subsidy from the federal government. The total handling margin for milk sold through stores, therefore, was $12 - 9.1 + 0.6 = 3.5$ cents per quart.[32] On the two-quart basis, it was 3 cents per quart.

In Los Angeles the resale (retail) price of milk is set, not by competition as in Washington, but by a state milk control board. The Safeway chain has stores in both cities; they report about the same distribution costs in Los Angeles as in Washington. In October, 1945, the milk dealers in Los Angeles paid farmers 8 cents per quart for milk; consumers paid 14.5 cents per quart for milk delivered to homes and 13.5 cents for milk at stores. Thus the total handling margin for milk sold through stores in Los Angeles was $13.5 - 8 = 5.5$ cents per quart. This was 2 cents wider than the corresponding margin at the same date in Washington.

Bartlett favors clearing the road for free competition. He expresses his views as follows:

"If you asked me the question, what method of determining retail prices would I recommend, my answer would be as follows. I recommend a system of price determination which will permit any dealer with a city-wide distribution to pass on to consumers the benefits of low-cost distribution. This might mean that one dealer charged a lower price for milk than another dealer, but the situation would be somewhat similar to that of an A. and P. store or other supermarket where, now, one can buy four cans of the Whitehouse brand evaporated milk for 31 cents, or four cans of Pet or Carnation milk for 33 cents.

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[32] *Fluid Milk Prices in City Markets, For November, 1945,* USDA, BAE, Mimeo., p. 6.

"Of course, practically, the prices established by trade associations and milk control boards are not adhered to. Most dealers give discounts to those who ask for them. This results in a chaotic price situation in which the gullible people are penalized to the benefit of those who ask for discounts. As I see it, if we can clear the road to effective competition such as we now have in Washington, D. C., this will force efficiency, both for store distribution, and for home delivery. In other words, if we can get efficient store distribution, personally, I am willing to let nature take its course as to what the home delivery price should be, knowing that a differential tends to encourage the redirection of milk through the lower cost channels. In this way, people pay for the service which they desire and one type of service does not subsidize another type of service.

"In order to insure equity in the payments to producers and equity in the purchase of milk by dealers it is essential that wholesale prices of milk be established under a federal or a state order. Personally, I favor the use of a federal or state order with prices which go up and down in line with supply and demand, such as are incorporated in the Chicago and St. Louis federal orders."[33]

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[33] Letters to the author from R. W. Bartlett, February 12, 1942, and December 18, 1945.

CHAPTER 20

Reducing Cotton Marketing Costs[1]

Cotton is the second most important crop in the United States, being exceeded in total farm value only by corn. It is produced in the areas shown in Figure 52.

Cotton is grown chiefly for lint, which is used to make cloth and thread. The seed is used for oil, feed, and fertilizer. The hulls are used for roughage to be fed to cattle, for paper and fiber board,

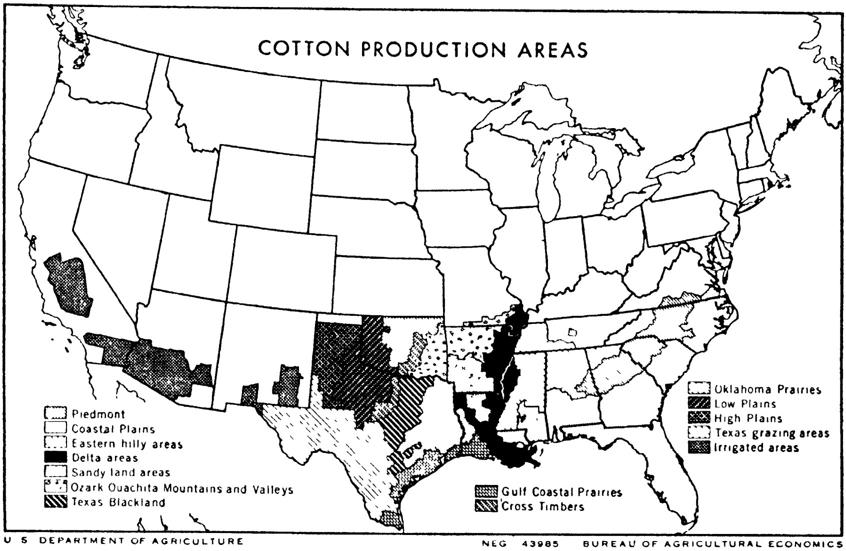

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FIG. 52—Cotton production areas in the United States.

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[1] This chapter is based chiefly upon the following sources:

J. W. Wright, *Marketing Practices in Producers' Local Cotton Markets*, USDA, BAE, Washington, D. C., May, 1938.

L. D. Howell, *Cotton Prices in Spot and Futures Markets,* USDA Tech. Bul. 685, Washington, D. C., June, 1939.

J. W. Wright, *Should Net-Weight Trading and Standards for Tare Be Adopted for American Cotton?*, USDA, AMS, Washington, D. C., September, 1939.

J. W. Wright, Francis L. Gerdes, and C. A. Bennett, *The Packaging of American Cotton and Methods for Improvement,* USDA Cir. 736, Washington, D. C., July, 1945.

Marketing Activities, USDA (processed), October, 1945, p. 14.

and occasionally for fertilizer. About 80 per cent of the cotton seed is crushed for oil and various other by-products; the remaining 20 per cent is used chiefly as seed and as feed for livestock. Ordinarily, between 1,300 and 1,500 pounds of seed cotton will produce one 500 pound bale of lint and from 900 to 1,000 pounds of seed.

When cotton is harvested, it is hauled to a local gin which separates the seed from the lint, compresses the lint, and wraps it up in standard "flat" or "square" bales weighing about 500 pounds. The density of the cotton in these bales averages about 13 pounds per cubic foot.

After the bales are turned out at the gin, they are shipped to cotton yards, warehouses, or compresses for storage pending reshipment to cotton mills in this country or abroad. Before shipment to the mills, a major part of the cotton is recompressed to higher density at compresses to permit more economical transportation. For shipment to domestic mills the bales are usually compressed to standard density (22–25 pounds per cubic foot). For export shipment, they are compressed to high density (32–35 pounds per cubic foot).

THREE TYPES OF COTTON MARKETS

There are three principal types of cotton markets: (1) farmers' local markets, (2) central markets, and (3) spinners' markets.

Farmers' local markets provide facilities for the sale of cotton by growers and for assembling and handling it before its shipment to central markets, concentration points, or spinners' markets. These markets are distributed throughout the Cotton Belt at points convenient to growers. Buyers of various types are found there.

The central markets provide facilities for concentrating, classing,[2] storing, financing, and merchandising of large quantities of cotton through time, as well as facilities for expediting spot and hedge transactions of cotton merchants. These markets are situated at points strategically located with respect to producing areas and mill centers in this country and abroad, such as New Orleans, Houston, etc. Cotton merchants, cotton factors or commission firms, exporters, brokers, and in some cases mill brokers or mill buyers operate at these central markets.

The so-called "spinners' markets" are located in mill centers.

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[2] Cotton is classed for grade and staple length. The grade of a sample of cotton is determined by its color, foreign matter content, and ginning preparation. Staple length is the length by measurement of a typical portion of the fibers in the sample. See BAE, *The Classification of Cotton,* USDA Misc. Pub. No. 310, 1938.

They function primarily in supplying mills with cotton at the time, in the quantities, and of the qualities desired. The personnel consists principally of mill buyers, mill brokers, and cotton merchants.

Frequently there are intermediate types between producers' local markets and central markets. They combine the functions performed in producers' local markets and some of those that characterize central markets. Similarly, some spinners' markets function as producers' markets and as central markets.

MARKETING CHANNELS FOR RAW COTTON

The marketing channels for raw cotton in the United States are many and diverse.

Geographical location of the producing area is the chief factor that determines whether the marketing channel is simple and direct, or complicated and circuitous. In parts of the southeastern states where the cotton produced has the grade and staple length desired by nearby mills, some growers sell directly, or indirectly through ginners, to the mills. Farther west, the growers are located some distance away from the mills in this country and abroad that use their cotton. In this case, the cotton passes through an elaborate and complex marketing organization. The bulk of the marketing system for cotton lies between these two extremes of simplicity and complexity. Figure 53 shows the various marketing channels in diagrammatic form.

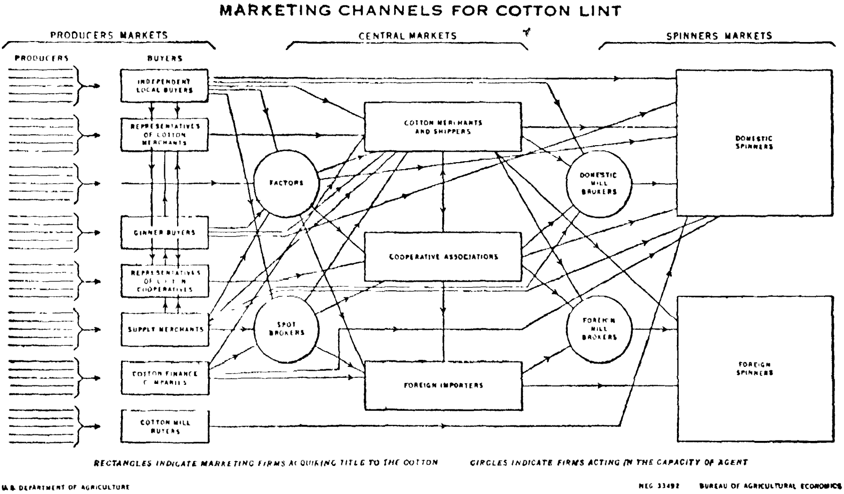
MARKETING CHANNELS FOR COTTON LINT
PRODUCERS MARKETS
CENTRAL MARKETS
SPINNERS MARKETS
PRODUCERS
BUYERS
INDEPENDENT LOCAL BUYERS
REPRESENTATIVES OF COTTON MERCHANTS
GINNER BUYERS
REPRESENTATIVES OF COTTON COOPERATIVES
SUPPLY MERCHANTS
COTTON FINANCE COMPANIES
COTTON MILL BUYERS
FACTORS
SPOT BROKERS
COTTON MERCHANTS AND SHIPPERS
COOPERATIVE ASSOCIATIONS
FOREIGN IMPORTERS
DOMESTIC MILL BROKERS
FOREIGN MILL BROKERS
DOMESTIC SPINNERS
FOREIGN SPINNERS
RECTANGLES INDICATE MARKETING FIRMS ACQUIRING TITLE TO THE COTTON
CIRCLES INDICATE FIRMS ACTING IN THE CAPACITY OF AGENT
U.S. DEPARTMENT OF AGRICULTURE
NEG 33492
BUREAU OF AGRICULTURAL ECONOMICS

FIG. 53 —Marketing channels for cotton lint.

Outside of the southeastern states where cotton is produced close to the mills that use it, the dominant marketing pattern for raw cotton is: (1) producer to local buyer, (2) local buyer to cotton merchant, (3) cotton merchant to domestic spinner through mill broker. If the cotton goes into export channels, the steps usually are: (1) producer to local buyer, (2) local buyer to cotton merchant, (3) cotton merchant to foreign importer, (4) foreign importer to foreign spinner through mill broker.

In some cases, a factor or commission firm, a broker, or a second buyer functions between the local buyer and the central market cotton merchant. It is not unusual for the cotton to change hands several times both in the local and in the central markets.

Local buyers. Cotton growers sell the largest share of their crop—more than a third of it—to independent local buyers. Growers sell a little less than a third of their crop to ginner-buyers (ginner-buyers buy cotton primarily to attract volume to their gins). Growers sell about 10 per cent of the crop to cotton merchants, and another 10 per cent to or through cooperatives.

Some cotton is sold direct to mills by growers in the Southeast where cotton mills are located in cotton-growing communities; but even there, usually one and often two marketing agencies—local buyers and cotton merchants—intervene between growers and spinners.

Cotton merchants. The cotton merchant holds a key position in the cotton marketing system. The range in qualities of cotton sold in a single local market frequently is very wide. Usually there is considerable variation in the quality of the cotton produced even on a single farm. Growers usually sell cotton a few bales at a time. Most cotton manufacturers, however, require cotton of a rather narrow range of grades and staples for the manufacture of specific types of yarns and fabrics. From the standpoint of convenience and expense, manufacturers usually prefer to buy the qualities required in even-running lots of 50 or 100 bales or multiples thereof, of relatively uniform grade and staple. This facilitates purchasing and simplifies their hedging operations.

Under these circumstances, the cotton merchant performs an essential function by assembling miscellaneous lots of cotton and concentrating them at strategically located points where the bales can be sorted into lots that are even-running in quality. He thus can supply the needs of individual manufacturers on short notice. In most instances he can do this work more efficiently than manufacturers can. Only those few spinners who produce a wide range of cotton products, and use practically the entire range of qualities available in a given area, buy direct from growers or from various types of local buyers.

TIME OF SALE

Cotton growers usually sell their cotton soon after it is ginned. In the northern part of the Cotton Belt, growers sell a considerable proportion of the crop as seed cotton even before it is ginned.

About 93 per cent of the United States crop, on the average, is ginned during the first four months of the season, and 69 per cent of it is sold by growers during this period. During the season 1936–37, 55 per cent of the crop was sold on the same day it was ginned, 73 per cent within two days, and 86 per cent within 10 days after it was ginned. These proportions vary somewhat from one season to another, and differ in different areas.

Many cotton growers have to sell their cotton early in order to pay their debts, although federal commodity loans are available. More than half the cotton growers list this as the prime factor. About one-third of the growers can sell when they consider prices most favorable. Some follow a fixed custom of selling when their cotton is ginned, regardless of their need for money or of the price situation. They prefer to avoid loss in the weight of the cotton and to avoid incurring storage, insurance, and other carrying charges.

Nearly one-fifth of the cotton crop is sold in single-bale lots. About one-half is sold in lots of less than 10 bales, and about 15 per cent in lots of 50 bales or more. Only about 6 per cent is sold by growers in lots of 100 bales or more.

REDUCTIONS IN GINNING COSTS

One of the first points at which the costs of marketing cotton could be reduced is the gin.

The volume of ginning at most gins is too small for most efficient operation. The number of bales ginned in the United States in 1940–41 averaged less than 300 bales per gin. The average costs per bale for ginning cotton are substantially less for gins with annual volumes of 500 or more bales per gin than for gins with smaller volumes. Data presented for cooperative cotton gins operated in Texas and Oklahoma during the seasons 1932–36 show that for gin plants with 5-gin stands of 80 saws each, the average expenses for ginning cotton decreased from $17.42 per bale for those ginning less than

500 bales per season to $4.82 for those ginning 1,500 to 2,000 bales and to $3.35 for those ginning 3,000 to 3,500 bales. Similar data for larger and smaller plants also show marked decreases in average expense per bale with increases in volume of ginnings per plant.[3]

In more than one-half of the counties in nine principal cotton-producing states in 1939–41, less than one-half of the estimated total ginning capacity on the basis of a 12-hour day was utilized during the peak load of the ginning season. In about 15 per cent of the counties less than 30 per cent of total capacity was utilized, and as much as 70 per cent of capacity was utilized in less than 15 per cent of the counties. The proportion of estimated total capacity on the basis of a 12-hour day by states utilized during the peak load period varied from 25 per cent for Texas, to 30 per cent for Georgia, about 60 per cent for Mississippi, Louisiana, and Arkansas, and about 119 per cent for Missouri.

These data clearly indicate that substantial reductions in the amounts of ginning equipment used and corresponding increases in the volume of ginning per unit of ginning equipment could be brought about in many parts of the Cotton Belt with little or no delay in harvesting and ginning, and with little or no increase in storage space required for seed cotton. Furthermore, the pressure on ginning facilities during the period of heaviest movement of cotton to gins could be eased and the period during which gins can operate at full capacity extended somewhat, by providing storage space for substantial quantities of seed cotton on farms during the peak of the harvesting season.

VALUE DIFFERENTIALS ARE NOT FULLY REFLECTED

The fact that cotton growers sell most of their cotton within a comparatively short season means that buying in producers' local markets is a highly seasonal business. Primarily for this reason, as a general rule, cotton merchants are not able to buy direct from growers through salaried buyers who are competent to class the cotton accurately in the first instance. Most of the cotton is bought from growers by local buyers who also have other activities to provide full-time employment. Usually such buyers are not skilled in the classification of cotton.

Accurate classing of cotton in accordance with the official standards requires frequent reference to the grade standards and to the staple types. But two-thirds of the first buyers neither own nor have access to copies of the official cotton standards. About 8 per cent of the cotton is classed by buyers for grade only, and nearly 7 per cent is bought without any examination by the buyer and without any distinction whatever for differences in the quality of individual bales.

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[3] L. D. Howell, *Marketing and Manufacturing Margins for Textiles,* USDA Tech. Bul. No. 891, March, 1945, pp. 20, 24.

Cotton of the higher qualities is usually worth more for spinning purposes than cotton of the lower qualities. Prices in central markets usually reflect fairly accurately these differences in spinning value.

In the local markets, the average price received by the growers in each market varies directly with the average quality of the cotton sold there. The production of cotton of the higher grades and longer staples is rewarded on a community basis.

The premiums and discounts for grade and staple length received by growers on an individual bale basis in these local markets, however, represent only a small proportion of those quoted in central markets. The average grade and staple premiums and discounts to growers vary directly with the reliability and general acceptability of the classification on the basis of which the cotton is sold.

During the season 1936–37, for example, prices to growers in local markets without an established classification service to growers reflected only 12 per cent of central market premiums for grades above Middling and 31 per cent of the premiums for staples longer than seven-eighths of an inch. The discounts for the lower grades averaged 31 per cent, and those for the shorter staples averaged 17 per cent, of those quoted in central markets. On the other hand, cotton sold on description on the basis of an established classification service reflected 76 per cent of the premiums for grades above Middling, and 67 per cent for staples longer than seven-eighths of an inch. The discounts for grades below Middling averaged 96 per cent, and those for staples shorter than seven-eighths of an inch averaged 134 per cent, of those quoted in central markets.

The local cotton markets, therefore, reflect in most cases only part of the premiums and discounts for high and low quality cotton that are being paid in the central markets. In addition, within each local market, too little attention is paid to the quality of individual bales. Cotton growers who produce lint of better quality than the average handled through their local market do not receive much more than growers who produce lint that is below the average quality of their community.

This practice of "point buying" or "hog-round buying," as it is called, does not necessarily mean that the local buyers make excessive profits. Usually the buyers resell the cotton on an individual-bale classification. They take losses on bales of the lower qualities and receive compensating profits on bales of the better qualities.

The use of the longer staples and higher grades of cotton in spinning increases the output per machine and per operator, and reduces the quantity of waste. It not only reduces manufacturing costs, but produces stronger yarns and fabrics that are more durable and otherwise more desirable to consumers. Most cotton growers, however, believe that it costs more to produce the longer staples and higher grades of cotton than the shorter staples and lower grades. "Point buying" therefore tends to encourage the production of cotton of inferior quality.

The failure of the marketing system to pass on to the growers the price differentials which reflect differences in spinning value to cotton manufacturers, therefore, adversely affects the consumers of cotton goods as well as the cotton producers who grow the best cotton. Furthermore, in view of the fact that foreign cotton-producing countries are making an aggressive attempt to improve the quality of their cotton, the competitive position of American cotton in world markets is made less favorable by practices that tend to discourage the production of cotton of the better qualities in the American crop.

This defect in the marketing system for cotton lint could be remedied by the wide use of an impartial and dependable cotton-classification service to growers, along with adequate information on prices. This would increase grade and staple premiums and discounts to individual growers, and thus encourage them to produce the cotton of the better qualities. This would provide consumers with better cotton and tend to increase the net income to growers as a group.

A step was taken in this direction by the passage of the Smith-Doxey Act in March, 1937. This act provides in part:

"Sec. 3a. The Secretary of Agriculture, upon request in writing from any group of producers organized to promote the improvement of cotton who comply with such regulations as he may prescribe, is authorized and directed to determine and to make promptly available to such producers, the classification, in accordance with the official cotton standards of the United States, of any cotton produced by them. The Secretary of Agriculture is further authorized to pay the transportation charges and to furnish tags and containers for the samples of cotton submitted for classification under this section, and all samples of cotton so classified shall become the property of the Government, and the proceeds of any sales thereof after classification shall be covered into the Treasury of the United States as miscellaneous receipts.

"Sec. 3b. The Secretary of Agriculture is also authorized and directed to collect, authenticate, publish, and distribute, by telegraph, radio, mail, or otherwise, timely information on the market supply, demand, location, condition, and market prices for cotton, and to cause to be prepared regularly and distributed for posting at gins, in post offices, or in other public or conspicuous places in cotton-growing communities, information on prices for the various grades and staple lengths of cotton."

The cotton classing and market news services which have been provided under this legislation have placed organized producers of improved varieties in a better bargaining position, and the classification memoranda furnished to members of such groups are being widely used in actual purchases and sales and as evidences of the quality of the cotton for purposes of Commodity Credit Corporation loans.

Funds were first provided for the administration of this legislation in July, 1938. During the 1938–39 cotton season 312 organized cotton-producer groups, with a membership of 18,589 farmers having a cotton acreage of 511,006, applied for and received the services. An extraordinary increase in farmer participation throughout the South has occurred since 1938. During the 1945–46 cotton season 2,443 organized groups participated, with a membership of 350,654 farmers growing nearly 11 million acres of cotton. The program thus included nearly half of the cotton crop.

THE AMERICAN COTTON BALE IS UNSATISFACTORY

The package in which American cotton is delivered to spinners has been the subject of criticism for more than 50 years, particularly in foreign markets. Manufacturers and processors of most American products have a reputation for the excellence of the packages in which their goods are sold, but American cotton has been called the most unsatisfactorily packaged product entering the channels of world commerce. Figure 54 shows what American cotton looks like by the time it reaches foreign markets. The dilapidated appearance of American bales in comparison with the neater packages in which cotton of other growths is presented has a bad psychological effect on foreign buyers.

THREE STAGES OF COMPRESSION

This criticism applies to all three types of bales (or degrees of density) in which American cotton is sold.

Low-density gin bales. Practically all American cotton is baled at the gin in low density rectangular "flat" or "square" bales, about 56 by 28 by 45 inches in size. The density of the cotton in these bales ranges from 8 to 15 pounds per cubic foot, averaging about 13.

Rectangular gin bales usually are covered with two strips of bagging 108 inches in length and 45 inches in width, and are bound with 6 ties weighing 1½ pounds each. This weight varies from about 4½ pounds for cotton bagging to 12 pounds for jute bagging. Trade rules quite generally provide a maximum tare of 21 pounds for gin bales.

Compressed bales. Practically all of the cotton produced in the Mississippi Valley and the southwestern states is compressed to higher density before shipment to domestic mill centers or to ports. These areas of production are sufficiently far from domestic mill points in the Southeast and in New England, as well as from export points, to make the compression economically feasible through savings in transportation charges that more than offset the expense of compression.

Much of the cotton produced in the southeastern states is consumed by local cotton mills, so the practice of compression to higher density is in many instances not economically feasible there. Only 12 per cent of the compresses are located in the southeastern states where 25 per cent of the American cotton is normally produced. Furthermore, the average number of bales compressed per press in the Southeast is only one-third of the averages for the central and southwestern regions of the Cotton Belt.

Two methods or degrees of recompression of low-density gin bales are employed—standard density and high density. The proportion of bales compressed to standard density and to high density, respectively, depends mostly upon the proportion of bales exported. High-density compression is required for minimum ocean transportation rates for cotton exported to foreign countries. But with the decline in exports during recent years, most of the cotton has been pressed to standard density.

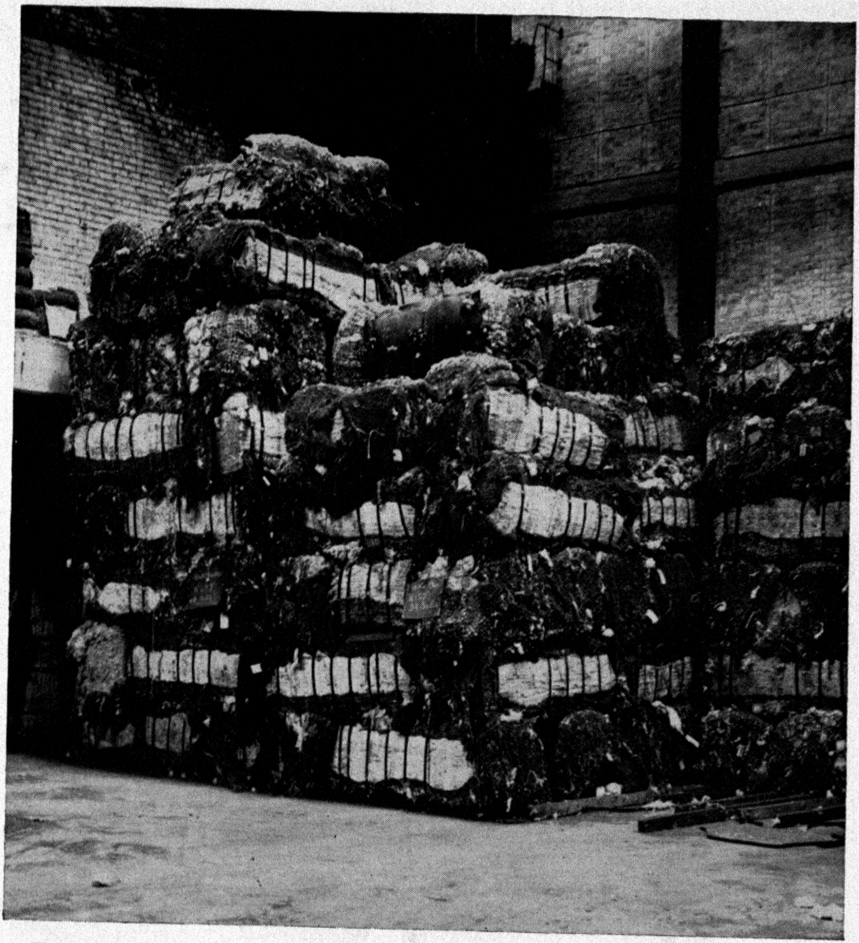

FIG. 54—Typical American bale package stored in a warehouse in England.

The average for bales compressed to standard density for domestic shipment is about 23 pounds per cubic foot. The usual density required in order to obtain minimum transportation rates is 22½ pounds per cubic foot. Standard-density bales average 56 inches in length, 31 inches in width, and 22 inches in thickness, as compared with 56 inches by 28 inches by 45 inches for low-density bales.

The essential difference between high-density and standard-density pressing operations lies in the nature of the pressure applied to the bales to produce the required densities. High-density presses employ side doors operated by sufficient force to produce lateral pressure on the bales. This reduces their width preceding the application of vertical pressure of the kind used in standard-density pressing. High-density bales, therefore, are narrower by about 9 inches than standard-density bales, and usually are slightly longer. The thickness is the same, or about 22 inches, for the two types of bales.

The high-density bales, having average dimensions of 57 inches by 22 inches by 21 inches, generally approximate 32 pounds per cubic foot. This is the density requirement for minimum ocean freight rates.

COMPRESSING COTTON TO STANDARD DENSITY AT GINS

Several changes in cotton marketing methods will be required to put up American cotton in a better package.

One change that has been suggested is that cotton be compressed to standard density in one operation at the gin, instead of in two operations as at present. These include compression to low density at the gin, and recompression to standard density in compresses at concentration centers. Bales that are compressed in two operations are unsatisfactory. Irregular shape and careless placement of bagging and ties on the bales result from the rapid rate at which the second compression operation is performed. The bagging is not always properly arranged to cover the sides of the bale, nor is the surplus bagging sewed together securely in order to cover the heads of the bale completely. These poorly covered recompressed bales present difficulties in handling and storage because of the loose tag ends of bagging.

Standard-density gin-pressed bales are the right size and weight for most economical transportation to domestic mill centers, as well as for handling in storage and for compression to high density for export. A narrow 22-inch bale may be recompressed to high density with a minimum of lateral pressure from the side doors of high-density presses.

The pressing operation with the standard-density gin press produces uniformly shaped bales. Gin-pressed bales therefore are more conveniently handled in shipment and storage than bales pressed at compresses to standard density from low-density gin bales. They also are more uniform in density and shape. The flat heads of these bales provide a surface that permits storage on end without support. The bagging on these bales is securely held in place by the bale ties. The superior handling qualities and appearance of gin-compressed bales are clearly shown in Figure 55.

The annual volume of ginning of many gins is too small to justify the investment necessary to install modern ginning equipment. Because of this, a substantial proportion of existing gin plants would find the per-bale cost of installing a standard-density press prohibitive. Yet more than 2,000 gins have an annual ginning volume of more than 1,500 bales per season, which would easily justify the installation of new standard-density presses to replace existing presses. Gins in this category now gin more than half of the United States cotton crop.

In general, more satisfactory results will be obtained by the installation of new standard-density gin presses, but the conversion of existing low-density gin press equipment to standard-density pressing would be economically feasible in a great many instances.

A standard-density gin press of suitable engineering design for integration with standard-ginning equipment may be constructed and installed without condenser and tramper at an estimated cost of $5,500. The regular condenser and tramper used with the low-density press may be adapted for use with the standard-density press. The estimated cost of the conventional all-steel low-density gin press is $3,000 without condenser and tramper. The standard-density gin press, therefore, would represent an additional investment of approximately $2,500 in equipping a new gin plant. This expense amortized over a period of 20 years, the estimated life of a press, would represent about $125 per year.

The extra cost per bale would vary inversely with the volume of ginning and, in the case of a replacement of an existing low-density press, with the salvage value of the used press. On a 20-year amortization basis, these extra fixed costs of standard-density gin packaging may range up from about 5 cents per bale with a ginning volume of 5,000 bales per season to 25 cents per bale with a ginning volume of only 1,000 bales.

The increased operating costs with the standard-density gin press, as compared with the low-density gin press, include repairs, maintenance, and power, with no extra costs for labor required in the operation of the press. These increased costs range from 1.9 cents with an annual volume of 5,000 bales to 2.3 cents with an annual volume of 1,000 bales.

The total increased costs for standard-density gin pressing over low-density pressing, including both fixed and operating costs, will range from about 7 cents per bale on a 5,000 bale-pressing enterprise to about 27 cents per bale on a volume of only 1,000 bales per season.

Standard-density gin packaging showed net savings over low-density gin pressing and subsequent recompression that ranged from about 43 cents per bale on a 1,000-bale gin volume to 63 cents per bale with an annual volume of 5,000 bales.

At present the majority of the companies operating cotton compress and warehouse facilities in the United States make a delivery charge for bales not compressed by them. That is to say, when an owner places cotton in storage in one of these facilities and later withdraws it from storage without having the bales compressed, he is required to pay, in addition to accrued charges for storage and other services performed, a charge for delivering from the warehouse. This charge is not made when the bales are compressed in the plant. Such delivery charges in many cases are equal to or approximately equal to the charge for compression.

Obviously, this system of charges would tend to offset the initial advantage of compression at the gin, provided the gin-compressed bales were to be stored in cotton compress warehouse facilities. Since a period of storage normally is required for the proper protection of the cotton between the times the bales are ginned and the time they are shipped to consuming mills, the adoption of gin compression in areas where this system of charges prevails would encourage the development of storage facilities either at gin point or in cotton-mill centers. Under conditions previously prevailing, neither of these alternatives would have been feasible because of the need for concentrating the cotton in large quantities in order to permit assembling lots of even-running quality to meet the requirements of mills, and because recompression of gin bales was required in order to obtain minimum rail-transportation rates. The recent trend toward single-variety cotton-production areas is making possible the assembling of lots of even-running quality at gin points. This development, combined with the adoption of standard-density compression of the bales at gins, would make possible the by-passing of the central concentration points in the marketing of cotton.

NET-WEIGHT TRADING

The unsatisfactory packaging of American cotton results not only from the baling practices discussed above, but also from the use of the gross-weight basis of trading, trade rules relating to bale "tare," and existing methods of sampling.

American cotton is sold in domestic markets on the gross weight of the bales; that is, on the actual scale weight of the bale, which includes the weight of bale-covering materials. An exception is found in American-Egyptian or Pima cotton, which, from the beginning of that industry in Arizona, has been sold on net weight. In all cotton-producing countries other than the United States and adjacent areas in Mexico, cotton is sold on a net-weight basis.

The proposal for net-weight trading recommends the use of the actual weight of lint cotton in a bale in connection with purchases and sales of raw cotton. Under a system of net-weight trading, payment for the cotton would be based on the gross weight of the bale minus the weight of bagging, ties, and patches.

The rules of most of the cotton-trade organizations provide that for uncompressed gin bales, the weight of bagging shall not exceed 12 pounds and the weight of ties, including buckles, shall not exceed 9 pounds, or a total of 21 pounds for bale "tare." These rules also provide that penalties shall be assessed against lightweight bales to compensate for the smaller proportion of lint cotton in such bales.

The per-pound cost of bagging, ties, and patches usually is substantially lower than the price of cotton. Under the gross-weight system, therefore, it pays the individual seller of cotton to use the heaviest materials permitted in order that he may receive pay for the maximum allowable weight. If materials weighing less than the allowable tare are used, the amount received per bale is less, under the gross-weight system of trading, than it would be if the heaviest materials permitted by trade rules were used. It is thus apparent that the gross-weight system discourages the use of light-weight bagging, ties, or patches that otherwise would provide satisfactory protection for the cotton.

Under the present gross-weight system with fixed allowances for tare, there is an incentive to choose bale-covering materials on the basis of cheapness and weight rather than for the protection afforded the bale contents. This results in the use of materials that fail to withstand the wear and tear of handling and shipment; and the extra weight beyond that which would actually be required for protection of the cotton, if suitable materials were used, adds substantially to transportation and other costs. Costs are further increased by the application of patches to bring the bale tare up to the tare allowances of domestic and foreign markets. These unnecessary costs are in addition to the losses from damaged cotton that result from unsatisfactory protection to the bale contents.

At present, because of the differences in tare allowances between domestic and foreign markets, bales must be patched differently for domestic and foreign shipment. Therefore, the entire process of concentrating, storing, and merchandising involves extra trouble and expense. The adoption of net-weight trading, by removing the inducement to increase tare weight, would tend to simplify the marketing process as well as to reduce costs.

Moreover, under the gross-weight system, cotton growers are handicapped in their desire to use bagging made of cotton, even when relative costs favor their own product. The difference in weight between cotton and jute bagging is such that the grower is usually penalized financially if he uses bale-covering materials that weigh less than the allowable tare. Other light-weight bale-covering materials likewise are excluded so long as gross-weight trading continues.

Although in selling cotton by gross weight, farmers appear to receive the price of cotton for the weight of the bagging and ties used for wrapping the bales, they do not, in the final analysis, either make a profit on these materials or receive pay for them. This is because the weight of bagging and ties for which the farmer is paid is offset by the lower price received for the cotton under this system of selling.

The value of a bale of cotton is calculated on the actual weight of lint and the price per pound is reduced to compensate for the bale tare when the cotton is sold on gross weight. Thus the belief of some farmers that in selling gross weight they make a profit on the bagging and ties to the extent of the difference between the price they pay for such materials and the value of an equivalent weight of cotton, is purely an illusion. Disregarding the savings and economies that would result from net-weight trading, the value of a bale of cotton is the same regardless of whether the basis of sale is net or gross weight.

Under the present gross-weight system of trading with fixed allowances for tare, the cotton trade appears to be able to make a profit by applying patches to the bales in order to bring the weight of bale-covering materials up to the allowable tare. This profit is possible because the cost of patching materials usually is less than the value of an equivalent weight of cotton. The difference between the price of cotton and the per-pound cost of patches appears to represent a profit to the owner of the cotton at the time the patches are applied. Usually, the gin bale carries less tare than is allowed in domestic-mill markets and in foreign markets. If transactions were conducted on the basis of net weight, the patching of cotton would be a direct charge against the cotton merchant and the possibility of selling such patches at the price of cotton would be eliminated.

Actually, under the competitive conditions existing in the cotton trade, these profits from patching are more apparent than real. Traders take such profits into account in the prices they pay for the cotton. It is doubtful whether in actual practice, the profits from patching really increase the margins obtained by marketing agencies. On the other hand, marketing agencies would profit from the simplification of trading practices and the improvements in packaging practices that would result from a properly safeguarded system of net-weight trading.

STANDARDIZATION OF TARE

The proposal for the standardization of cotton-bale tare contemplates the adoption of definite standards with respect to strength, weight, and dimensions of materials used for covering cotton bales, including bagging, ties, and patches.

To ascertain the net weight of a bale of cotton, both the gross weight and the weight of tare must be known. At present, there is wide variation in weights of tare on cotton bales, and the weight of tare on an individual bale usually changes one or more times while the bale is passing through marketing channels. On gin bales the original weight of tare is determined not so much by the grower as by the ginner, whose choice of bale-covering materials and tare weights is likely to be somewhat influenced by the competition with which he is faced. Under present methods, even when ginners attempt to keep the weight of bagging uniform, significant variations may result from irregularities in fabric weights and from inexact cutting of patterns. The addition of patches to the bale at the time of compressing changes the weight of the tare from the original gin weight by the time the bales finally reach their place of consumption.

Thus, without the standardization of tare the weight of tare usually is not known and is not readily apparent. To ascertain the weight involves opening the bale, stripping and weighing the wrappings, and then recompressing the bale—a process that is costly and frequently not practicable. Under these circumstances, if an attempt were made to trade on the net-weight basis, each buyer of cotton would deduct enough tare to insure his own protection against claims of those to whom, in turn, he might sell. The burden of these precautions would fall back upon the grower, who might thus at times have to sustain deductions of weight in excess of actual tare.

Realization of the full advantages of net-weight trading would require positive provisions for the standardization of bale-covering materials with respect to weight, strength, and dimensions. If net-weight trading were adopted, the incentive to add weight to the bales in the form of bale coverings would be removed. But if the tare were not standardized, those responsible for covering bales would then use the cheapest materials available, regardless of weight. American cotton then might reach spinners in still worse condition than it does now.

What is required, therefore, is the standardization of the bale-covering materials. Then the persons who do the weighing of the bales would designate the net weight in each instance. These persons would be able to recognize the bale-covering materials used, to know the standard weight in each instance, and to deduct the tare from the gross weight of the bales in order to arrive at the net weight for purposes of settlement.

AUTOMATIC COTTON-BALE SAMPLER

Fundamental changes in sampling methods also will be required before a complete solution to the cotton packaging problem can be reached.

As bales are sampled today, a man with a knife cuts a big handful from each of the two sides of the bale. Practically every bale is hacked in this manner several times during the course of its movement from the gin to the cotton mill. As a result, the bale gets ragged-looking and loses several pounds in weight. Formerly the sample holes were covered by patches applied during the compression process. Much of the cotton now used by domestic mills is not patched. Although ostensibly the patches are used to cover sample holes, the principal motive of their use is to add weight to the bales by bringing the tare weight up to the maximum allowable under trade rules. Moreover, the fees for sampling, repeated several times, represent a sizable part of the spread between grower prices and manufacturer prices—a spread which most cotton people agree must be reduced if cotton is to compete sucessfully with other fibers and foreign-produced cotton.

In addition, the samples obtained by the present sampling method do not reflect the true quality of the cotton throughout the bale. In many cases the bales are mixed-packed, so that a sample cut out of the sides does not necessarily reflect the quality of the cotton throughout the bale.

To meet the need for a better sampling system, the Department of Agriculture has developed an automatic cotton-bale sampler. The automatic sampler obtains a sample of the contents of the entire bale during the ginning process. In a gin, after cotton lint is separated from the seed it is sucked through a length of lint flue (a wide pipe), collected in a condenser, and turned into the gin-bale press. The automatic sampler can be fitted to the ordinary lint flue. An aerofoil swing valve which is opened intermittently by an automatic turning mechanism during the ginning of a particular bale diverts a small part of the stream of lint into the much smaller box that is to hold the sample. The swing valve automatically opens six times during the ginning of that bale, and diverts a representative pound of that lint stream into the sample press at the same time that the lint to form the 500-pound bale goes to the gin press.

A recent modification of the sampling equipment permits installation of the sample press on the press deck, where it is handy to the gin-press attendant. The sampler may be geared into standard gin equipment at reasonable cost. Although the automatic mechanical equipment as originally conceived is not yet fully perfected to the extent of providing an automatically packaged and marked sample, the equipment for automatic extraction is fully perfected and has functioned satisfactorily at several commercial gins.

It is estimated that acceptance of this apparatus by ginners and marketing agencies would reduce marketing costs by approximately a dollar a bale. This would squeeze 10 or 12 million dollars out of the cost of marketing the American farmers' annual cotton crop, besides improving the usefulness of the bale covering and the appearance of the bale.

CHAPTER 21

Reducing Fresh Fruit and Vegetable Marketing Costs

The production of fruits and vegetables in the United States grew to the proportions of a two and half billion dollar industry during World War II. Farmers received a billion dollars for fruits, and a billion and a half for vegetables.[1] The principal production areas are shown in Figure 56.

Most fresh fruits and vegetables do not require much processing, so the processing part of their cost of marketing usually is low. But most of them are bulky and perishable, and many of them are shipped long distances, as Figure 57 shows in the case of California lettuce. Their marketing costs on those scores are high. Only a third of the consumer's dollar spent for lettuce gets back to the lettuce grower. The figure for cabbage is still lower—only 24 per cent.

There are many different kinds of fresh fruits and vegetables, each with its own methods of marketing and each with its own marketing problems. These methods and problems are so heteroge-

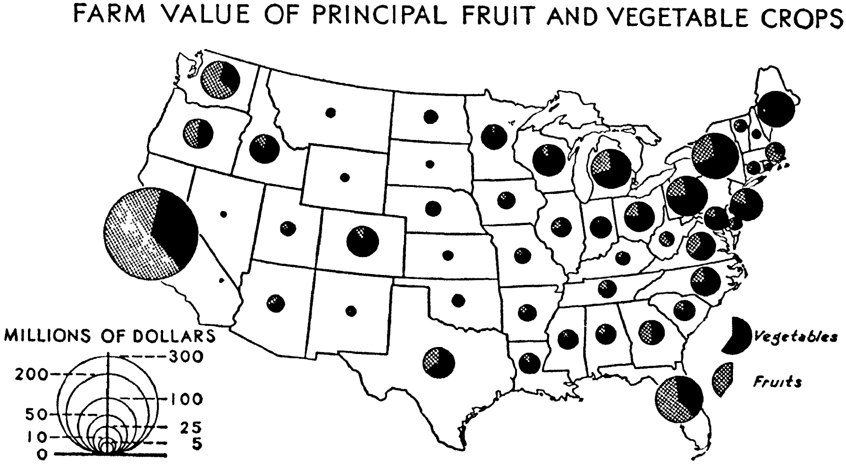

FIG. 56—The principal fruit and vegetable production areas are located on the eastern and western coasts (M. C. Gay, *Marketing Fruits and Vegetables Cooperatively,* FCA Cir. No. C-110, 1938.)

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[1] *Agricultural Statistics, 1944,* USDA, p. 430.

neous that it is difficult to deal with them adequately in one chapter. The most important methods of sale are outlined briefly below.

METHODS OF SALE[2]

About 15 thousand handlers of fruits and vegetables are licensed by the Department of Agriculture each year. This group may be considered as embracing mainly wholesale distributors of these products; it includes cooperatives, buyers, brokers, jobbers, commission houses, and others. There is an annual turn-over of about 20 per cent in this group. About half of these changes may be accounted for by consolidations, reorganizations, and voluntary retirement from business; the other half by business failures.

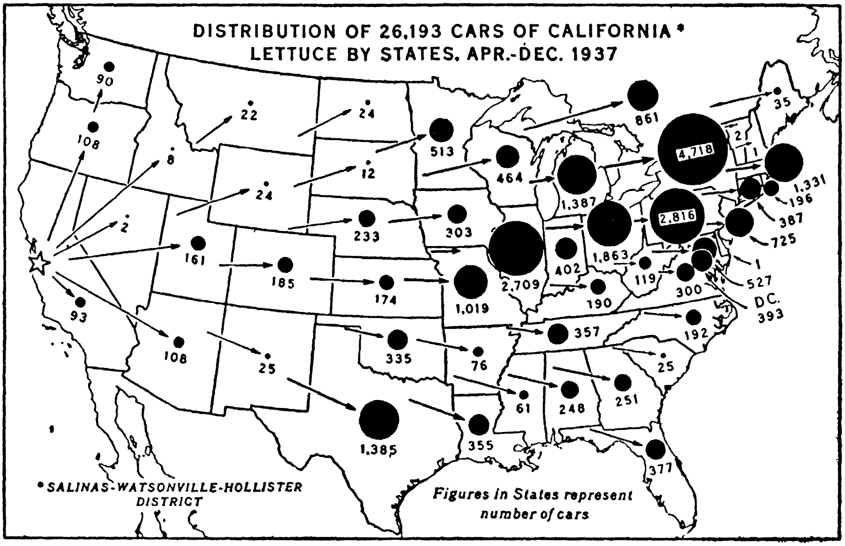
DISTRIBUTION OF 26,193 CARS OF CALIFORNIA*
LETTUCE BY STATES, APR.-DEC. 1937
90
108
8
22
24
12
24
2
161
93
108
25
185
174
233
513
303
464
1,387
861
4,718
2
1
35
1,331
196
387
725
2,816
1,863
402
2,709
1,019
119
300
1
527
DC.
393
190
357
192
335
76
25
61
248
251
1,385
355
377
*SALINAS-WATSONVILLE-HOLLISTER DISTRICT
Figures in States represent number of cars

FIG. 57—Distribution of lettuce produced in the Salinas-Watsonville, Hollister district of California is nation-wide, but the principal markets are in East, North Central, Middle Atlantic, and New England States. (Courtesy USDA.)

In the old days the commission merchant received carlots of fruits or vegetables upon consignment. The jobber purchased full loads and sold in smaller quantities. The brokers, performing fewer services than commission men, sold in carlots to jobbers and other receivers and acted as agents for shippers at the terminal auction.

During recent years the distinctions between these different operators have begun to break down. Only a few concerns now operate strictly as commission merchants. In most markets brokers buy or split cars with jobbers. Retail handlers purchase at shipping point, upon the terminal market, at auctions, from jobbers, from motor truck operators, and others. In some markets the jobber handling motor truck loads is becoming increasingly important. He buys upon the wholesale market and at the auction and distributes to a rather established clientele without the expense of maintaining a store or jobbing house. His principal cost is for hauling.

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[2] This section is based on M. C. Gay, *Marketing Fruits and Vegetables Cooperatively,* Farm Credit Administration Cir. No. C-110, Washington, D. C., August, 1938, pp. 14–22.

The several methods employed in merchandising fresh fruits and vegetables are well known to the trade and to experienced association managers, but are not always fully understood by producers. A brief explanation of these methods follows.

CASH TRACK, F.O.B. SHIPPING POINT SALES

The term "cash track" is sometimes confused with "f.o.b.," especially in the South, where the latter term is frequently used erroneously in describing cash-track transactions. When the buyer examines and accepts the product free on board the car or other recognized transportation facility, paying cash upon receipt of bill of lading, the transaction is properly known as a "cash-track" sale. Generally speaking, producers are partial to this method of making sales for the reason that all risk of subsequent deterioration in quality of produce or decline in price is assumed by the purchaser.

F.O.B. ACCEPTANCE OR F.O.B. USUAL TERMS

Either of these terms is used to describe the method of sale used when the commodity is placed free on board cars or other agencies of transportation at shipping point in suitable shipping condition, the buyer assuming all risks of damage and delay in transit not caused by the shipper. The purchaser has the right to inspect the product at destination before paying for the shipment, but only for the purpose of determining that the product shipped complies with the terms of the contract or order at the time of shipment, subject to the provision covering suitable shipping condition. The right of inspection does not permit the buyer to reject the shipment because of loss, damage, deterioration, or change which has occurred in transit.

In many sections of the country, this method of sale is regarded by producers as practically the same as the consignment method. This is probably because in many instances f.o.b. purchases are made by houses in the terminal markets whose rating is such as not to induce free consignments to them. Some dealers in this class are inclined to make f.o.b. purchases and then "kick over" the shipments upon arrival. Then they offer to handle the shipment for the account of the shipper. Under such an arrangement, the receiver is assured of his handling charge without assuming responsibility for market declines.

F.o.b. sales are made direct by wire to purchasers in the terminal markets, through brokers or through cooperatives or private sales agencies. Seldom is the individual producer in position to handle sales by this method. If he performs the task of producing, packing, and loading efficiently, he has little time for developing a sales program. Furthermore, the chances are that his experience is limited to that of production. The ideal arrangement, of course, is to have an efficiently operated cooperative with an experienced and skilled sales manager to handle distribution.

Before the passage of the Perishable Agricultural Commodities Act, the shipper had little protection with reference to rejections on f.o.b. sales. The administration of this act has greatly alleviated the situation with reference to unjustified rejections. The enforcement of this act also has resulted in much more specific contracts between buyers and sellers; the receiver frequently designates exactly the percentage of decay or other deterioration which he will accept.

F.O.B. ACCEPTANCE FINAL

When sales are made f.o.b. acceptance final the buyer accepts the commodity f.o.b. cars at shipping point without recourse. The same agencies and methods are employed in handling this type of sale as in making sales f.o.b. usual terms.

CONSIGNMENT SALES

In consignment sales the shipment is forwarded to a commission merchant in the city, who may (1) sell the car on the track as a solid carlot to jobbers, wholesalers, or receivers; or (2) handle the product through a store from which it is sold in less than carlots; or (3) sell it in less than carlots to peddlers and others from the car door. The commission merchant is responsible for making an accurate accounting to the shipper; that is, he renders an "account sales" which shows the quantity sold, amount received, freight paid, and charges for services.

DELIVERED SALES

By this method the commodity is sold to be delivered by the seller on board the car—or dock if delivered by boat—at the market in which the buyer is located or at such other market as agreed upon, free of all charges for transportation or protective service. The seller assumes all risks of loss and damage in transit not caused by the buyer. The shipper with a quality product who is efficiently represented in the terminal market frequently gains by employing this method of merchandising. It is especially effective when supplies are limited and there is an active demand. When the product arrives at destination in good condition, the purchaser is able to supply his needs without assuming risks of deterioration in transit or declines in price; hence, he is in better position to pay the full market value upon the basis of actual supply and demand. The usual trade channels are employed in handling this type of sale.

AUCTION SALES

Auction sales in the terminal markets are limited almost entirely to the well-graded products such as citrus fruits and boxed apples. Ungraded products do not lend themselves to this method of handling. Products handled on the terminal market auctions are first displayed and catalogued; then they are offered for sale in the auction room, where the shipper is represented by a broker or other representative who has the right to withdraw the product from the auction if he feels that the price offered is out of line with the market.

For a number of years Louisiana strawberries have been sold through the auctions at shipping point. All berries are covered by federal-state inspection certificates and are offered for sale in carlots. This method of handling seems to have been most satisfactory to producers in that area.

Shipping-point auctions have been established for several years in districts along the Atlantic seaboard, especially in areas near the larger markets. For the most part, the produce handled on these auctions moves to market by motor truck. Most sales are in less than carlot quantities. The rather extensive use of the shipping point auctions in the handling of vegetables in South Carolina in the late 1930's greatly stimulated the demand for federal-state inspection and resulted in an improvement in the methods of handling these commodities and a marked improvement in quality. Through the exchange of information between auctions at various shipping points, a rather uniform price level was maintained, whereas there was no uniformity or established price policy in unorganized selling before the auctions were established.

CONTRACT SALES

There are two distinct methods of making contract sales: (1) sales to canners and other processors upon a fixed-price basis, and (2) joint account or production contract sales. Canning, drying, and freezing are becoming more important adjuncts to the distribution of fruits and vegetables. Hence, in certain areas of intensive production, large acreages are contracted upon a definite price basis each year.

In many districts, commercial distributors contract with producers each year to plant certain acreages either upon a definite price basis or for a share of the crop. In addition to receiving the "time" price for supplies furnished, and either a definite number of packages per acre or a specific portion of the crop, the distributor also contracts to handle, for a service charge, any portion of the crop not required to repay production advances.

FARMERS' MARKETS

Recent years have witnessed an extensive development of farmers' retail markets, sometimes known as curb markets by reason of the fact that in some instances vehicles are parked at the street curb for the wholesale or retail handling of farm produce. Some of these markets have been in operation for many years. Frequently the farmers' market is operated adjacent to sections of commercial retail stores. This facilitates direct sale by producers to retail handlers. Containers used in selling on the local market are different from those used in shipping to distant cities.

It has been necessary for municipalities to pass ordinances regulating the operation of these markets, and in some instances townships or cities furnish supervisors and inspectors to pass upon the quality of products offered, and to regulate the manner of handling. Many of these markets are owned outright by producers who have formed an association and have limited offerings on the markets to products grown by the members. In such cases the organization is run as any other cooperative; that is, directors are selected by the membership, management is employed, records are maintained, and other operations carried on in the usual manner.

These farmers' markets vary all the way from merely a designated space in a section of a city without any equipment, to modern market structures, including individual counters or stands and in some instances grading, storage, and even refrigeration facilities. Since 1933, funds have been made available by some of the federal agencies to finance in whole or in part the construction of facilities for markets of this and other types. Legislatures of some of the states also have appropriated funds for the construction of farmers' markets and for the provision of marketing facilities at shipping points. In a few instances the states have provided extensive port facilities for use upon a nominal rental basis by cooperatives and private agencies handling agricultural products.

CITRUS FRUIT

Citrus fruit provides a striking case of organized marketing from producer to retailer.

The greater part of citrus fruit marketing in the United States is conducted by growers' cooperative marketing associations. The California Fruit Growers' Exchange, for example, just before World War II handled 72 per cent of the oranges, 67 per cent of the grapefruit, and 89 per cent of the lemons produced in California and Arizona.[3]

This association has grown steadily since it was organized in 1905. It now includes 14 thousand growers organized in 200 local packing units. These in turn are grouped into 25 district exchanges, with the central exchange, the headquarters, located in Los Angeles. This organization provides for the picking, packing, and shipping of citrus fruit under proper care so that the fruit will arrive at the market in good condition.

A comprehensive sales organization distributes the fruit over the country in a systematic way so as to avoid gluts in some markets and shortages in others. The physical set-up of this sales organization is shown in Figure 58.

The sales offices shown in Figure 58 keep the central Exchange sales department informed about supplies, demands, and prices in the various markets by telephone, teletype, telemeter, etc. The central office relays this information to the 25 district exchanges. These district exchanges decide how much to ship to the different markets, and send word of their shipments to the central Exchange, which in turn relays this information to the various sales offices.

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[3] N. Fogelberg and A. W. McKay, *The Citrus Industry and the California Fruit Growers' Exchange System,* Farm Credit Administration, USDA, Cir. C-121, June, 1940.

The day before each car is due at the market of destination, the sales department confers with the district exchange. A price is agreed upon and wired to the sales office receiving the car. If the agreed price cannot be obtained and if the offered price is not acceptable to the district exchange, the car is diverted to another market.

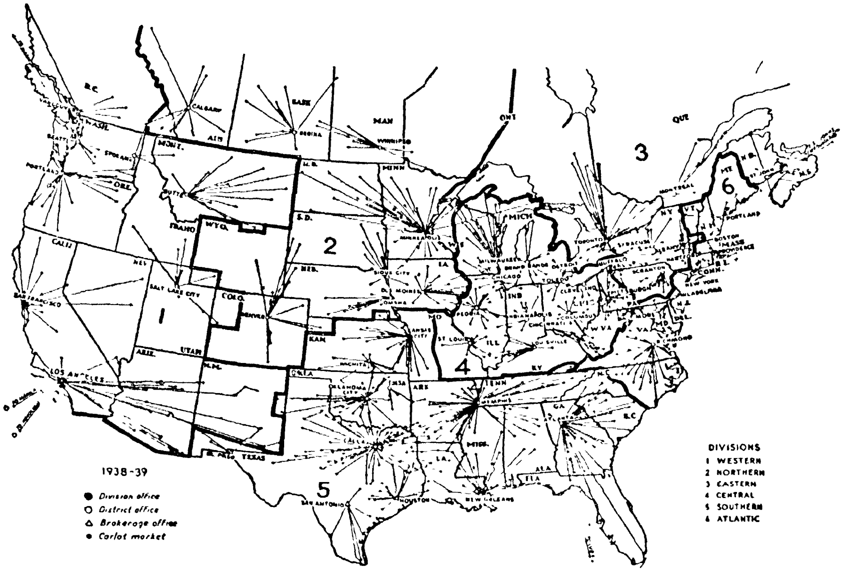

FIG. 58—Sales offices and carlot markets served by the California Fruit Growers' Exchange. (N. Fogelberg and A. W. McKay, *The Citrus Industry and the California Fruit Growers' Exchange System,* FCA Cir. No. C-121, 1940.)

California citrus fruit can be shipped east of a line from the Montana, Wyoming, North Dakota, South Dakota, and Nebraska state lines through Cheyenne, Wyoming, Denver and Trinidad, Colorado, to El Paso, Texas, at carload rates ranging from 90 cents to $1.42 per 100 pounds. Under these rates, the shipper is allowed to divert his car to markets intermediate to the original billed destination at a low diversion charge. The only limitations on diversion are that main routes must be followed and that the car cannot be diverted backwards toward its origin. For an additional charge, however, backhauls or out-of-line hauls are permitted for stated distances. Thus with little extra cost, cars can be moved from one market to another if quoted prices warrant such movement.

This coordinated overhead system of distribution is a long step in the direction of efficient marketing. It is well suited to conditions in the citrus fruit industry, where the producing areas are small and located far from most of the consumer territory, and the produce is fairly well standardized. In the case of most other fruits and vegetables, where the producers are widely scattered over diverse areas and the produce is heterogeneous, progress has been more difficult. In most cases fruit and vegetable marketing remains confused and unsystematic in the country and in the central markets as well.

WHOLESALE OR TERMINAL MARKETS FOR FRESH FRUITS AND VEGETABLES[4]

The physical problems involved in getting the goods and the buyers together in the central wholesale or terminal markets for fruits and vegetables are far from a satisfactory solution. The congestion at some of these large fruit and vegetable markets, and the inefficiency of their operation, is very great. Many of these wholesale and jobbing markets need to be completely reorganized.

In a number of cities there are too many wholesale fruit and vegetable markets, poorly coordinated with one another, and inadequately equipped to handle motor truck receipts. Reorganization would substantially reduce the cost of city wholesaling and distribution and provide better service to farmers, retailers, and consumers.

Most of the markets "just growed," like Topsy, without any over-all plan. Their facilities are antiquated. The new markets that have been built are not always properly designed; some of them were built for the benefit of certain elements in the trade or individual railroads, not for the benefit of the efficiency of the market as a whole.

In many cities the wholesale fruit and vegetable markets are very old. The Faneuil Hall Market in Boston is about 200 years old. The French Market in New Orleans is about 150 years old. Each is still one of the most important markets in its city. The Pearl Street Market in Cincinnati was established in 1804. The Dock Street Market and the Callowhill Street Market in Philadelphia, and the Roanoke Avenue Market of Norfolk, are nearly 100 years old. A number of other markets have been in use for more than a half a century.

Many changes have taken place since the old markets were constructed. When such markets as Faneuil Hall in Boston, the French Market in New Orleans, and the Dock and Callowhill Street Markets of Philadelphia were built, most goods were transported by water. These markets are (or were at the time of construction) water-front markets. When water transportation was largely supplanted by rail in the hauling of fruits and vegetables, produce arriving by rail was frequently hauled from the railroads to these old established waterfront markets. There it was placed on sale. Local produce was brought in by horse and wagon. The established markets, although in many instances not ideally located and arranged for handling this new business, continued to exist with little or no change. Now, motor trucks have largely supplanted horses and wagons. Recently they have been substituted for railroads to a certain extent. But these markets have continued to function with little change. Markets originally designed to take care of horse-and-wagon traffic are now being called upon to take care of motor trucks that are 35 and 40 feet long. Many of these trucks are longer than the width of the streets in front of the stores.

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[4] This section is based on W. C. Crow, *Wholesale Markets for Fruits and Vegetables in 40 Cities*, Cir. No. 463, BAE, USDA, 1938; W. Calhoun, "The World's Largest Produce Market," *The Agricultural Situation*, BAE, USDA, January, 1940, pp. 23–23; and William C. Crow, W. T. Calhoun, and J. W. Park, *The Wholesale Fruit and Vegetable Markets of New York City*, A Special Report, USDA, April, 1940.

Changes in methods of transportation are not the only changes that have taken place since many of our produce markets were built. In some of the cities the population has increased manyfold, so that a market originally intended to serve a few thousand people is now trying to carry on the wholesaling and jobbing for many times that number. The population of New Orleans is 86 times as large as it was when the French Market was established. Boston has 43 times as many people as when the Faneuil Hall Market was set up, and Philadelphia's population has increased 2,100 per cent since the Dock Street and Callowhill Street Markets began operation. To cite less extreme cases, Indianapolis is five times as large as when its principal market was established; Detroit's population has increased 800 per cent since its Western Market and Eastern Market were built; and Denver's population is nearly three times as great as it was when its principal market began to operate.

In most instances only slight modifications have been made to take care of some of the increased business instead of the more or less complete renovation that would provide an efficient market. In many cities where these markets have not been able to care for the increased business of the growing population, supplementary markets have been established in other locations, but the old markets have remained important in the distribution of fruits and vegetables. Consequently, in most cities the markets or outlets have been split.

In some cities, because of expanding business, antiquated facilities, inadequate planning, and changing conditions like those described, certain elements of the produce trade have become dissatisfied and have attempted to bring about improved conditions and practices. In the same markets, other less progressive dealers, many of whom had a property interest in the existing facilities or were afraid of split market, have refused to take part in any activities looking toward any change. As a result one group of wholesalers and jobbers has pulled away from the established market and set up a competing market in another section, perhaps performing exactly the same functions as the older market.

In some cities the situation has been complicated by the action of the railroads. The old markets frequently were unable to handle the rail business efficiently as the volume of fruits and vegetables arriving by rail increased, so new facilities became necessary. In order to attract business to its lines, a railroad, after enlisting the support of members of the trade who were dissatisfied with conditions in the established market, would therefore build a modern produce terminal market, perhaps at a cost of several million dollars.

These railroad produce terminals, instead of being established as a part of or near existing markets, usually have been built on land already owned by the railroad or on land that was selected for some reason other than its desirability for a market. Perhaps excellent facilities were provided; but they were not established as a part of the existing market nor with the idea of absorbing it. In fact, as a rule, these new produce terminals have consistently refused to handle any produce except that arriving by rail, and have even refused to handle produce arriving over any other railroad. Frequently any plans to coordinate the activities of the railroad produce terminals with those of the existing markets have been ignored. To take care of future needs, many of these terminals were built large enough to handle all the rail receipts of fruits and vegetables of the city. But some competing railroad, unable to use the new terminal, has duplicated these facilities in some other part of the city. It, too, bars all produce except that arriving over its own lines and practically ignores any plan for market coordination.

In several cities this building of railroad produce terminals has provided some excellent physical facilities for handling perishable products but without effecting any substantial reduction in marketing costs, because there has been needless duplication, inadequate planning, and the imposition of arbitrary regulations.

THE WORLD'S LARGEST PRODUCE MARKET

New York City provides the most striking illustration of inadequate market facilities. It is the world's largest market for fresh fruits and vegetables. Its annual supplies, arriving by all forms of transportation, average about one carload a minute for the daylight time of every working day in the year. The 212,000 carloads received in 1939 came from 42 states and many foreign countries. Nearly one-eighth of the total commercial production in the entire United States finds its way to that one great market, and values established there influence the prices of hundreds of thousands of carloads sold in other parts of the country. The New York market is in every sense of national importance.

Three-fourths of the total supply is handled through the great Washington Street market section of Lower Manhattan. The other fourth consists principally of receipts at farmers' markets, direct receipts at chain store warehouses, and commodities such as potatoes, watermelons, and juice grapes, which are mostly handled in separate, specialized markets.

The Washington Street Market is located along the lower west side of the Island of Manhattan, in the very shadow of the great skyscrapers of the financial district. Not for any particular reason is it located on some of Manhattan's highest priced land—the market has just always been there, or at least, for more than a century. For 12 blocks it extends along either side of Washington Street—one of those deep and narrow canyons built by man on this densely populated island. Three modern motor trucks side by side fill Washington Street from curb to curb, and with one parked at either side, there is only enough space for one truck at a time to move through the center lane. Cross streets are but little wider. Old store buildings open from the sidewalks—and open from only one narrow street. Built solidly against the buildings of the next street, they have no rear entrances or loading platforms in these blocks.

Each night there comes to these stores a long procession of huge transport motor trucks, bringing produce from the entire Atlantic Seaboard, from New England to Florida. Each night come the contents of hundreds of railroad cars, hauled by other trucks from nearby unloading piers or from distant team tracks—for Washington Street has no direct rail connections with the outside world whence comes this endless stream of supplies. Each night there come, too, the cargoes of many ships, berthed at their piers along the rivers. Through this Lower Manhattan market there is handled each working night an average of more than 500 carloads of fresh fruits and vegetables, arriving by rail, truck, and boat.

Then come the trucks of thousands of buyers, to load their purchases and rush them away to stores, push carts, and fruit stands before they are wilted by the morning sun. Trucks, trucks, everywhere—by actual count a total of between 3,000 and 4,000 coming and going during each night, of which 1,200 to 1,350 are in the market area at any one time between midnight and 7 a.m. With most streets only 30 feet wide, the trucks must stand parallel to the curb, and only about 400 can be parked in the spaces adjacent to produce stores. The other 900 must stand in long lines of waiting traffic, or are parked on side streets and back streets.

Deliveries from stores to trucks are made chiefly by porters using small hand trucks. Along crowded sidewalks, among towering stacks of produce, these hand trucks weave in and out. At the corner they are wheeled off the curb with a thud, and then jiggled along cobblestone streets, loaded with the tender and highly perishable fruits and vegetables which have been handled so carefully all the way from farm or orchard, perhaps 3,000 miles away, that they might arrive at the market in good condition.

Relics of bygone days, fronting on narrow streets, with no loading or unloading platforms, these old store buildings are in a sorry plight when called upon to act as terminals for fleets of modern motor trucks. The city's population has grown manyfold since the market was first established. Year-around supplies come from scores of distant producing sections. Shippers have streamlined their handling and packing methods. Hours and days have been cut from transportation schedules between shipping point and market.

Speedy trucks and arterial highways assure quick delivery from the market. But the market itself has failed to keep pace with modern developments. Supplies must be moved through the same narrow streets to and from the same store buildings as they were more than half a century ago. Hundreds of motor trucks must stand and wait while their loads are laboriously transferred by hand. Buyers, salesmen, truck drivers, and helpers—all must spend long hours of tedious and costly delays, for delays are costly indeed in city distribution of perishable food products.

The first great difficulty is of getting supplies into the market. Developing in an old part of the city, without plan or design, the market is made up of widely scattered and unrelated facilities. With no rail connection, cars can get no nearer than the river front, where they must be unloaded from ferries, or car floats, onto one of seven piers, or they may be placed on team tracks several miles distant and their contents hauled by truck to Washington Street. Steamship cargoes are unloaded at many other piers. Some products are sold and delivered from the piers, and others are hauled to the Washington Street stores to be sold. Buyers must visit several unloading points to obtain a complete list of products. Driveway space for trucks and teams is limited on the piers, and deliveries are slow and costly.

The total annual bill for direct deliveries from the piers, by the methods and charges known locally as "O.C." and "Pierhead delivery," is about $800,000. Hauling between piers, team tracks and Washington Street stores, and from one store to another, adds up to the staggering sum of $3,280,000 annually—just to assemble supplies within the Lower Manhattan market. But "cartage" (as it is still known in New York from the old horse-and-cart days) is not the only cost of moving these supplies through the market. In addition, there is the hire of all the porters who carry the produce or push it on hand trucks between the stores and the waiting motor trucks. This amounts to another $1,340,000 in a year.

The total annual cost, then, of just the physical handling, hauling, and delivering in the Lower Manhattan market amounts to $5,420,000. Much of this is due to the scattered unloading and delivery points, requiring an immense amount of hauling to concentrate supplies for sale in the market area. If sales platforms and stores were arranged so that incoming supplies could be unloaded directly at the place where they are to be sold, much of this hauling would be eliminated. If streets were wide and sales platforms and stores had both front and rear entrances, so that trucks could back up to the sales floors and then get away promptly, instead of parking parallel to sidewalks in narrow, congested streets, the amount of handling would be greatly reduced.

This would not only save a large part of the annual cash outlay for hauling and handling, it would mean a great saving in time—an important factor in the distribution of fresh fruits and vegetables. Of equal importance would be the lessened deterioration of these perishable food products, resulting from decreased handling, bruising, and exposure.

Other savings might be made in methods of doing business. Land values are high here in the shadow of the skyscrapers, but efficient distribution of fruits and vegetables requires lots of space. Thousands of tons must be handled in a few hours. Space must be provided not only for the display and sale of the products themselves, but also for thousands of motor trucks and other vehicles which transport them. Most of the business must be done on the ground floor, so it is essentially a one-story industry. Since the market cannot be built high in the air like a department store, or like the office buildings nearby, nearly all of the overhead costs must be carried by the ground floor. Therefore, high land values will inevitably mean either high rental charges on the industry for supporting the large capital investment, or inadequate space and facilities for the proper handling of perishables.

Why is it that these produce markets remain in the same old cramped, inadequate, and obsolete quarters in so many of our cities? Other industries move as the cities grow, but seldom does the fruit and vegetable industry move unless compelled to by outside forces, as when a market area is taken over by a city for other uses. Perhaps the nature of the business itself is partly responsible. Most wholesalers of groceries, or shoes, or hardware, for example, are also located in certain sections of the city, much in the same way as are produce merchants. A few of the wholesalers of these commodities may decide that their location is outgrown or that they could do better in some other part of town, but the others prefer to remain where they are. The methods by which these products are sold and delivered may be such that these few dealers can move to a new location, still attract their buyers, and eventually establish a new wholesale district.

But for the distribution of fruits and vegetables, buyers must go to market during the night or early morning and rush their supplies back to their stores for that day's business. Speed is urgent. Buyers wish to make purchases as quickly as possible. A wholesaler who is off the beaten path just does not get customers, and a few firms cannot step out by themselves into a new location. All have to go together, or suffer the serious consequences of a split market. The greater the number of dealers, the greater the difficulty of getting them to agree to any program of action.

New York is such a large city that the question has been raised whether it needs a system of several decentralized markets, one for each borough, rather than a single centralized market large enough to handle the produce for the whole city. These decentralized markets would be close to the retailers in the different boroughs, and the produce that was unloaded and sold there could move directly to the retailer without going through any secondary market on the way. A special market commission in 1913 in fact recommended such a system of markets, and one of them was built in the Bronx.

Since that time, however, trucks have replaced horses and wagons, and arterial streets and highways have been constructed in the city. These have in effect shrunk the area of the city. Most retailers now prefer to go to a single large central market even at some distance in the city than to deal with a smaller market close at hand.

There are two or three reasons for this.

In a fruit and vegetable market, supply consists chiefly of goods brought in from day to day. These products wilt or deteriorate so quickly that they cannot be held for any long periods of time, so supplies fluctuate greatly from one day to another, and this in turn leads to wide fluctuations in prices. The buyer wants supplies concentrated in one market in order that he may be sure he is not paying more than the true market price for that day. The seller also wants a central market where all buyers will assemble in order that he may get the real market value of his products and distribute them over as wide an area as possible.

A further argument given for a central market is that even with all the progress that has been made in setting up standards and grades, fruit and vegetable buyers still feel that they cannot make their purchases of most commodities on the basis of description or grade. They wish personally to inspect the commodities before they purchase. In order that these comparison of quality can be made it is best to concentrate the supplies within one area.

Finally, markets in New York display more than a hundred different fruits and vegetables during the course of the year. Many of these in turn consist of numerous varieties or types, and all differ decidedly in factors of size, color, quality, and condition. Some buyers serve customers who demand the best quality. Others sell to people of low incomes who must provide the most food practicable for each dollar. Still other buyers specialize in supplying restaurants or hotels where certain sizes or other requirements must be met. Each group has different needs, and to meet these needs the greatest possible range of offerings is required. For this reason buyers want to go to the central market where the largest quantity and variety is available.

Under these conditions, therefore, a single large central market is, on balance, believed to be best able to meet New York's needs. But it is obvious that this market should be well laid out on lines which permit it to handle a large volume of produce efficiently, and that it should permit sales both in large and small lots so that no secondary markets are needed between it and the retailer. Both of these features would reduce costs to the minimum.

HOW CAN CENTRAL MARKETS BE IMPROVED?

The foregoing discussion in terms of New York City applies on a smaller scale to most of our other large cities in the United States. In most cases, it is reasonably clear what kind of market reorganization needs to be put through. The problem is how to get the job done.

It was shown in Chapter 17 on livestock marketing that as the railroads opened up the West, the livestock markets in most of the large cities went through the same stage that wholesale fruit and vegetable markets are in now. The livestock markets, however, soon pulled through that stage. The railroads and other interests pooled their forces and set up one modern union market in each city in place of the several scattered markets. The Union Stockyards set up at Chicago in 1865 is one of the best examples of the action that was taken then.

If that is the direction in which the wholesale fruit and vegetable markets in large cities should move, how can the move best be made?

Perhaps some public agency that can actually build new facilities and regulate their use in the interests of the public is needed. The State of New York has set up several agencies called "Market Authorities" that have provided facilities in several up-state markets. For some of the larger interstate markets, perhaps some form of market authority supervised by both the federal and state governments might be developed.

Probably a corporation of this kind should not actually operate the markets; that is, it should not do the actual buying and selling of foods. The business still would be done by private enterprises, but the facilities would be provided by the market authority and that authority would make and enforce whatever regulations were required to protect the public interest. For instance, such regulations might be concerned with hours of selling and similar matters that affect the efficiency of marketing. An authority of this kind should be financed from charges made for the use of market facilities. Ideally these charges should be set at a point that would make the authority self-supporting, but not high enough to build up any unnecessary reserve funds from profits.

Unless something of this sort is done, the present wholesale fruit and vegetable markets may find themselves by-passed altogether. Crow recapitulates past and present developments, and projects them into the future, in these words:

"The way of development in nearly all the large cities may be summarized substantially as follows:

'An old produce market, which perhaps came into existence as a retail market and which probably was located on a water front, became antiquated and, because of its failure to make improvements commensurate with changing conditions, some of the dealers broke away from it, setting up a new market. Then, as neither of these markets was suited for handling produce arriving by rail, another market was established by a railroad. This in turn, because of its regulations, made it necessary for a competing railroad to establish still another market.

'A few years from now perhaps this sentence will be added: As none of the markets was equipped to handle the increasing quantities of motor truck receipts, yet another market was established.

'Or perhaps the addition may be: As none of these markets was equipped to handle motor truck receipts and as the multiplication of markets added to marketing costs without improving the efficiency of the city marketing system as a whole, the whole system of markets failed, and the business was largely taken over by large-scale retailers who dealt directly with producers and shippers, and by regional markets that were established to bring about direct contact between producers and shippers and retailers.

'It is too early to know what this additional sentence will be, but it is known that the volume of business passing through the wholesale and jobbing markets of many cities has been declining and that the movement around these markets has been increasing.' "[5]

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[5] W. C. Crow, *Wholesale Markets for Fruits and Vegetables in 40 Cities,* USDA Cir. 463, 1938, p. 12.

CHAPTER 22

Reducing Interstate Marketing Costs[1]

The erection of trade barriers that shut off normal commerce is not confined to European countries. Within the United States there are many such barriers, built on a mistaken theory of shutting out the competition of other communities, other states, other products. Many and devious are the methods used to accomplish this end—oppressive restrictions on motor trucks, misuse of milk-inspection procedures, excise taxes on margarine, taxes on "outside" alcoholic beverages, dubious or nonuniform commodity "standards," and illegitimate quarantine regulations.

The smooth and efficient flow of products from the farm to consumers is constantly interrupted by the existence of a large number of laws, ordinances, regulations, and administrative decisions that set up unnecessary restrictions on interstate trade and sometimes even on intrastate trade. These restrictive measures, formerly almost unnoticed, began to multiply after 1929.

Administrative officials in the various states, through their national organizations, were among the first to recognize the seriousness of the development. As early as 1925, the United States Livestock Sanitary Association, national organization of the state officials in charge of animal quarantine regulations, had set up a committee on unification of laws and regulations. At its annual meeting in 1937 the National Association of Marketing Officials devoted a full day to a consideration of internal trade barriers. In November, 1938, the National Association of Secretaries, Commissioners, and Directors of Agriculture passed a resolution condemning attempts to discriminate against the products of other states. At a regional conference of the Council of State Governments, held the same month, internal trade barriers were the chief subject of discussion. When the whole picture is drawn in, it becomes evident that a kind of unpremeditated, partial economic warfare exists among the states of the Union.

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[1] Most of the material in this chapter is adapted from E. L. Burtis, and F. V. Waugh, "Barriers to Internal Trade in Farm Products," *1940 Yearbook of Agriculture,* pp. 656–66, and from George R. Taylor, E. L. Burtis, and F. V. Waugh, *Barriers to Internal Trade in Farm Products,* USDA, BAE, Spec. Rpt., 1939.

This is a development which the Federal Constitution was specifically designed to prevent. Article 1, Section 8, gives to the National Congress the power "to regulate commerce . . . among the several states"; and Article 1, Section 10, provides that "no state shall, without the consent of Congress, lay any duties on exports or imports except what may be absolutely necessary for its inspection laws."

As the Supreme Court said in 1824, in the case of *Gibbons* v. *Ogden:* "If there was any one object riding over every other in the adoption of the Constitution, it was to keep commercial intercourse among the states free from all invidious and partial restraints." And, indeed, one of the main purposes in calling the Constitutional Convention had been to provide an opportunity to consider ways and means of halting the commercial wars raging between some of the colonies.

One of these wars had been between New York and neighboring states. New York had levied high harbor entrance fees on small ships from New Jersey and Connecticut, with the purpose of discouraging New Jersey and Connecticut farmers from shipping their firewood, dairy products, and garden vegetables to New York City for sale and thereby taking money out of New York state. In retaliation, New Jersey had levied a real estate tax of $1,800 a year on a small plot of ground at Sandy Hook where New York had erected a lighthouse to aid shipping in New York Harbor. In Connecticut, the merchants of New London had pledged themselves to boycott all New York goods. By 1786 almost all of the states of the northern half of the Confederation had levied import duties on each other's products, duties so high as to be protective measures. In the same year the Massachusetts Legislature had passed an act totally prohibiting the importation of some 58 articles.

A contemporary leader speaking before the Massachusetts Legislature[2] to urge ratification of the Constitution described the existing situation as follows: "As to commerce, it is well known that the different states now pursue different systems of duties with regard to each other. By this and for want of general laws of prohibition through the Union we have not secured even our own domestic traffic that passes from state to state."

The adoption of the Constitution by the colonies did, in large measure, "secure domestic traffic." As the United States expanded in area and grew in population during the following decades, it became one of the largest and most populous free-trade areas in the world. When all parts of the country were bound together with a network of rails in the latter half of the nineteenth century, producers of many commodities and articles found that they could reach a large part of the population of the nation at prices the people could afford to pay. This mass market has made possible the phenomenal development of mass production in industry, mass distribution in merchandising, and specialized areas of production in agriculture.

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[2] Dawes, in the Independent Chronicle and Universal Advertiser, Boston, January 31, 1788.

Without an enormous market, easily and freely accessible, the great intensely specialized citrus-growing areas of California, Florida, and Texas—to mention a single example—could not have developed, and consumers in northern cities would not enjoy such ample supplies of oranges and grapefruit at such low prices. Even potatoes, which are raised almost everywhere, are heavily concentrated in about a dozen areas, such as Aroostook County, Maine, Long Island, New York, and the eastern shore of Virginia. Without a wide national market the Corn Belt, the Wheat Belt, the Cotton Belt, and the great cattle ranges of the West would not have developed, although a readily available foreign market also contributed to their growth. It is apparent how closely both the prosperity of American agriculture and the well-being of our great city populations are bound up with the maintenance of the nation-wide market that is made possible by free internal trade.

MOTIVES FOR RESTRICTIONS

Why, then, have restrictions on trade been imposed—restrictions so numerous and severe that they seriously threaten free trade within the United States?

An urge to protect local industries and local producers is always present. The ills at home are easily seen and keenly felt, while those farther away are harder to appreciate. It is a natural thing, therefore, to try to aid home industries even if the action taken is detrimental to others. When the depression set in, this perennial tendency was powerfully reinforced by the acute distress of many groups of agricultural producers. American agriculture had already felt the pinch of narrowing foreign markets, and when purchasing power slacked off so rapidly at home, farmers were under great impulsion to hold as much as possible of what was left of their markets and to protect themselves against encroachments by their competitors. Farmers appealed to their legislatures and to their state and local officials, and many protective laws and regulations resulted.

At about the same time, the motor truck and the merchant trucker became major factors in the transportation and marketing of farm products. They upset old patterns of marketing; and although often offering higher prices to some farmers than other agencies of transportation and marketing, they exposed other farmers to unwonted competition, perhaps bringing competing products into areas not so well or so cheaply served by rail. Merchant truckers, in particular, often "went around" established middlemen at both the country and the city ends of their hauls. This situation added to the incentive of some farmers and middlemen to protect themselves against competition.

It must be recognized, nevertheless, that the protectionist motive is not the only factor that has been responsible for the erection of trade barriers. Contributing factors have been the reluctance of states to forego sources of revenue and a simple lack of coordination among states in their efforts to regulate, resulting in nonuniformity of requirements from state to state.

In much of the legislation designed to protect in-state producers, the constitutional provision giving Congress the power to regulate interstate commerce has been circumvented by disguising restrictions upon interstate trade as revenue measures, measures for the protection of public health or safety, or measures for the prevention of the spread of plant and animal diseases. Also, in some fields Congress has not exercised its constitutional power to regulate interstate commerce. In the absence of regulation by Congress, the courts have ruled that the several states may (within limits) exercise control over interstate commerce.

DISADVANTAGES OF EXCLUSION COUNTERACT BENEFITS

Most trade barriers have been promoted by local groups of producers with the motive of keeping as much of the local markets as possible for themselves by preventing or hindering the sale of competing products produced in other states. This policy may, of course, raise prices at least temporarily in the local markets and give the local producer a kind of monopoly advantage. Nevertheless, agricultural producers are harmed in two ways by these market-exclusion practices. (1) Although they may be able to get some measure of protection on their local markets, they are harmed by similar measures in outside markets to which they might want to ship their surpluses. (2) The monopolistic advantages gained by market exclusion are likely to be short-lived.

When a local group of dairymen succeeds in establishing unnecessarily high and complex inspection requirements on milk, they not only shut out some of the supply which might compete with them, but they also raise their own costs of production. Moreover, by excluding outside milk and cream they add to what in most normal years is a national surplus of cream and butter. This tends to demoralize the butter market. Since the prices of dairy products all tend to be based on butter prices, this situation is not a healthy one for the dairy industry.

Let us take another example—that of a dairy state which imposes a prohibitive tax on margarine. This is intended, of course, to benefit the local dairymen. Yet it is a question whether Wisconsin dairymen have been benefited or hurt by the margarine tax of 15 cents a pound in that state. It is true that the tax has been almost completely effective in stopping the sale of margarine in the state of Wisconsin. This probably means that a little more butter is sold in that state; but the price of butter in Wisconsin, of course, is determined by what the national market will pay for it. Probably the margarine tax has had no significant effect on butter prices. Moreover, the tax in that state has led to a great deal of resentment in the South, and although there has not yet been any official boycott of Wisconsin products, it is quite apparent that the present situation does not help Wisconsin producers to find markets in the South. Many more examples could be given, but perhaps these are typical.

When exclusion of outside products leads to retaliation, the local producer is more likely to be harmed than helped. It is clear that in the long run agriculture would be better off with free and open markets throughout the country.

TYPES OF RESTRICTIONS

What are the restrictions and regulations that most seriously hamper trade in farm products? They are most numerous and most serious in the following fields: (1) regulation of motor trucks and merchant truckers, (2) regulation of the marketing of dairy products, (3) margarine taxes and regulations, (4) taxation on and regulation of the sale of alcoholic beverages, (5) grading, labeling, and standardization measures, and (6) plant and animal quarantines.

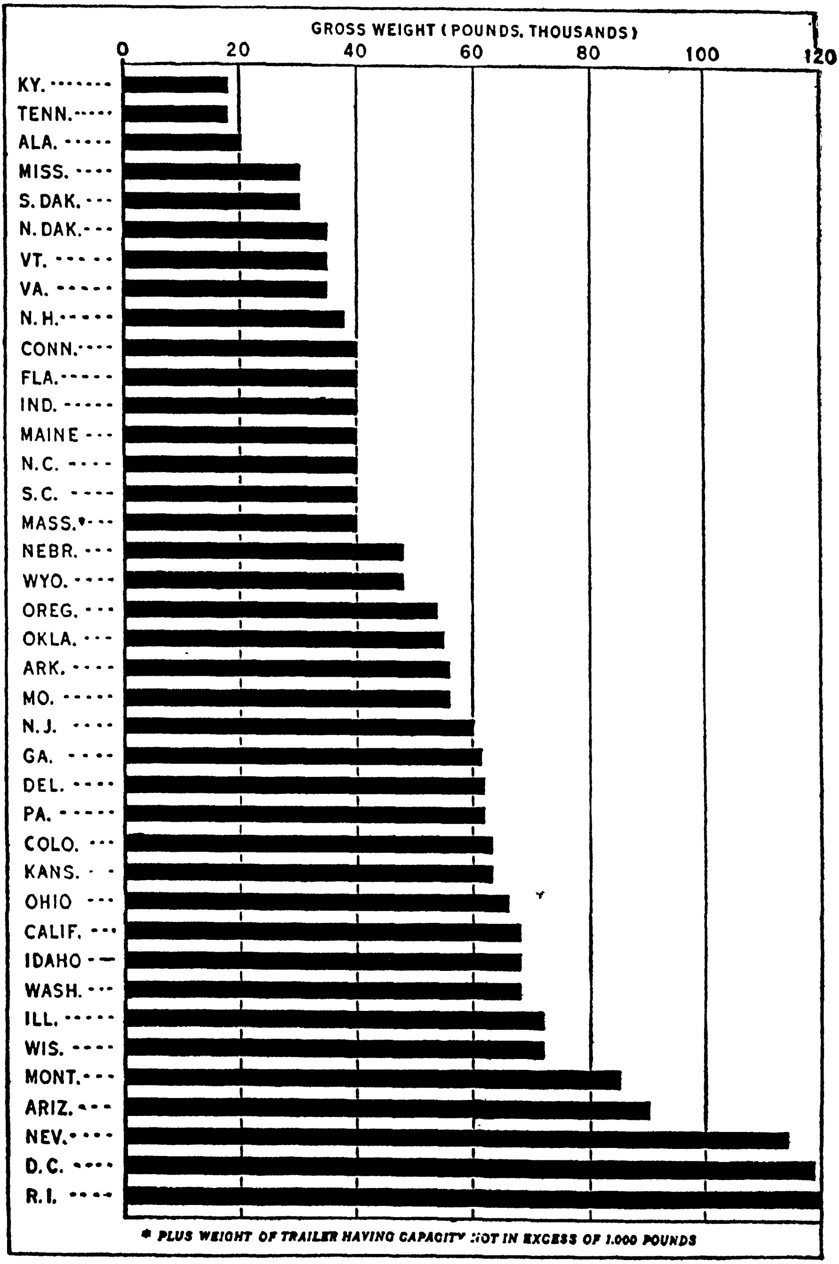
REGULATION OF MOTOR TRUCKS AND MERCHANT TRUCKERS

Some states, among them Massachusetts, New York, California, and Ohio, permit motor trucks owned by nonresidents to enter the state without payment of any fees so long as they do not engage in intrastate business within the state, this arrangement usually being contingent upon reciprocity of treatment. Such freedom of interstate movement, however, is not typical of the country as a whole. There are a few states that will not allow an out-of-state motor truck to come in even for a single or occasional trip without purchasing a state license tag or without paying a ton-mileage tax higher than that charged in-state trucks. Most states place similar but less extreme restrictions on out-of-state trucks. It is plain that requirements like these must necessarily discourage interstate movement by motor truck.

Another serious impediment to interstate movement of goods by truck is the great variation among the states in requirements as to the width, length, and weight of trucks and as to the safety appliances they must carry. This variation is shown in Figure 59.

This figure shows that Kentucky and Tennessee allow a maximum gross weight of only 18,000 pounds. In addition, Kentucky will not permit a motor truck to use the roads if it exceeds 30 feet in length. These limits prevent any but the lightest trucks from crossing two states which stretch from the Mississippi River to the crests of the Alleghenies, and hence constitute a serious barrier to transportation by trucks between states north of the Ohio River and states to the south. A South Carolina law that was enacted in 1933, but was never enforced and was repealed in 1938, would have limited the width of motor trucks to 90 inches, 6 inches less than the standard width, and their gross weight to 20,000 pounds. This law would have set up a very serious barrier to the movement of citrus and other produce north from Florida, and out of North Carolina southward. Together with the Tennessee and Kentucky laws, it would have stretched a barrier from the Mississippi River to the Atlantic Ocean interfering with north-south truck movements.

The merchant trucker—the trucker who buys goods in one locality, carries them to another, and there sells them—is especially likely to be affected by the requirement of having to purchase a license plate for his truck even for occasional visits to a state. In many states he is also required to take out a license to do business as a merchant trucker. The fee charged for such a license ranges



BAE 34799

FIG. 59—Maximum gross weight of permissible combination of motor vehicles, by states, 1939.

from $10 annually in Iowa, for a light truck, to $100 annually in Montana and $300 annually in each county in Idaho and Washington in which the trucker wishes to do business.

High fees charged merchant truckers are not in themselves restrictive to interstate trade, except in cases where a trucker might wish to do business in two states having them. However, most legislation of this kind, by exempting from its scope farmers carrying produce grown on their own farms, has the effect of favoring producers close to a consuming market at the expense of those located farther away. This is true because only farmers close to the market, say within 20 or 30 miles, can economically haul their own produce to market. Those farther away must get someone to do the hauling and merchandising for them.

PORT-OF-ENTRY LEGISLATION

Under port-of-entry legislation, states have set up checking stations at points where main highways enter the state. Here officials halt incoming (and in some cases outgoing) traffic in order to subject motor vehicles to certain regulations, inspections, and taxes. Kansas, which inaugurated this type of legislation, experimented in 1933 with the policing of its borders to keep out "bootleg gasoline," and on January 1, 1934, put into effect a full-fledged port-of-entry system.

Under this program all trucks entering the state are required to obtain proper clearance. For trucks bearing Kansas license plates, this is a relatively simple matter. For others the procedure is more complicated. The driver of a carrier not having a Kansas registration is required to fill out a rather elaborate form describing the truck and its load, the proposed route of travel in the state, etc. State officials are required under the law to inspect the truck and its equipment to make sure it meets the requirements of Kansas, to check for proper insurance coverage, and to collect taxes that vary with the weight of the vehicle and the distance it is to travel in the state.

The Kansas plan has spread rapidly, having been put into operation in one form or another by Oklahoma, Nebraska, Arizona, New Mexico, California, Idaho, Utah, and Colorado. Up to the present time, Kansas and Oklahoma have set up the most elaborate systems, the former with 66 ports of entry, and the latter with 58. The other states vary considerably in the way in which they have organized their port-of-entry systems, but most of them appear to have sufficient stations to cover the main highways and effectively to enforce their registration and taxation requirements on out-of-state cars. Also, in a number of states (California, Arizona, and Idaho) ports of entry have been combined with, or are supplemented by, highway quarantine stations. The situation is satirized in Figure 60.

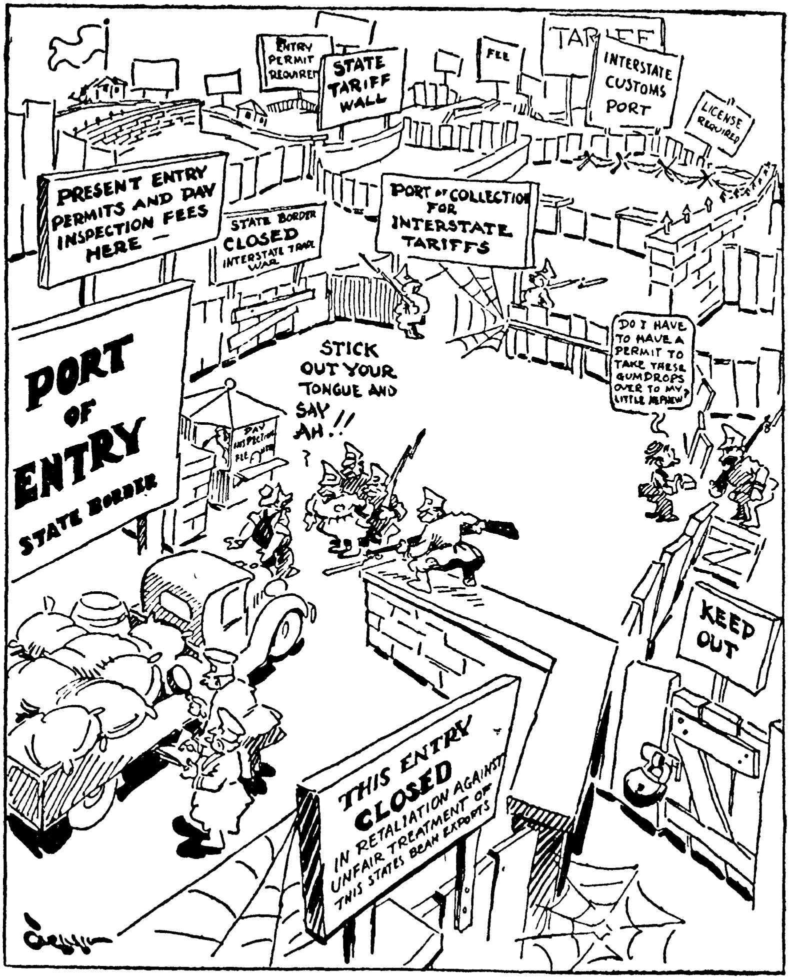

ENTRY PERMIT REQUIRED
STATE TARIFF WALL
FEE
TARIFF
INTERSTATE CUSTOMS PORT
LICENSE REQUIRED
PRESENT ENTRY PERMITS AND PAY INSPECTION FEES HERE —
STATE BORDER CLOSED INTERSTATE TRADE WAR
PORT OF COLLECTION FOR INTERSTATE TARIFFS
PORT OF ENTRY STATE BORDER
STICK OUT YOUR TONGUE AND SAY AH!!
?
DO I HAVE TO HAVE A PERMIT TO TAKE THESE GUMDROPS OVER TO MY LITTLE NEPHEW?
PAY INSPECTION FEE HERE
KEEP OUT
THIS ENTRY CLOSED IN RETALIATION AGAINST UNFAIR TREATMENT OF THIS STATE'S BEAN EXPORTS

FIG. 60—A cartoonist's impression of state barriers to trade (Courtesy *The Des Moines Register*).

The ports of entry are set up primarily for the purpose of collecting ton-mile taxes on interstate trucks, enforcing compulsory insurance and safety laws, and checking the dimensions and weights of incoming motor carriers to assure compliance with size and weight requirements. Sometimes they also are used to enforce plant and sanitary regulations, and to collect taxes on gasoline carried in the fuel tanks of cars and trucks about to enter the state. The "ports" are particularly spectacular because of their similarity to the customs offices commonly found at international boundaries. Although not serious in themselves as barriers to interstate trade, they provide a means for enforcing all kinds of restrictions, good and bad.

REGULATION OF THE MARKETING OF DAIRY PRODUCTS

The importance of a safe milk supply is well known and unquestioned. To insure that it will be safe most towns and cities, and in some cases the state authorities, inspect the farms where the milk is produced. The usual procedure is to permit only milk from farms that have been inspected and approved to enter the city or town or the state, as the case may be.

There can be no question of the necessity of making sure that milk is germ-free and healthful. But by refusing to inspect the farms of all producers who desire inspection, or by charging a high fee for such inspection, the authorities in charge of inspection can exclude healthful milk. For example, Haverhill, Massachusetts, will not accept milk shipped in from a distance of more than 40 miles. Walpole, Massachusetts, places the limit at 30 miles, and North Attleboro at 8. Similarly, New York City will not send inspectors west of Pennsylvania. While it probably would not be profitable to ship milk from Ohio to New York City, western cream is kept out of the New York City market by this action.

There is a real opportunity to remove the barriers to interstate trade in milk and cream and other dairy products by devising a system under which each state and each municipality will accept inspection by accredited inspectors located in other states.

MARGARINE TAXES

Prior to 1929 several unsuccessful attempts had been made by dairy states to discourage the consumption of margarine. In the years from 1885 to 1897, five states had enacted laws requiring margarine to be colored pink. These laws had become inoperative, however, when the United States Supreme Court declared the New Hampshire law void. In the 1920's three states had passed legislation prohibiting the sale of butter substitutes in which milk or cream had been combined with edible oils. (Some milk or cream is necessary if the substitute is to be palatable.) But these laws had been defeated by popular referendum in two of the states, and in the third the state supreme court had granted a permanent injunction against enforcement of the law.

Although losing out in this skirmish, those wishing more restrictive margarine legislation presently led the attack on a new and this time much more successful front. Two states, Montana and California, had earlier experimented with a state excise on margarine, but no state had such an impost at the beginning of 1929. In that year Utah placed a 5-cent-per-pound excise on uncolored margarine. In 1931, following Utah's lead, 10 states adopted margarine excise taxes. Today over half the states have margarine excise legislation of one kind or another. In addition, many of these states have increased or for the first time have imposed license fees upon those who manufacture or sell margarine. Since 1929, therefore, we have entered a period in which margarine taxes have a place on the statute books of more than half of our states. Three states now impose a tax of 15 cents a pound; one state, a tax of 12 cents; seventeen, a tax of 10 cents; and three, a tax of 5 cents.

EXISTING MARGARINE LAWS

Most states strictly regulate the labeling of margarine packages so that the consumer may know what product he is purchasing.[3] Then many states provide not only that stores selling margarine shall make that fact known in some conspicuous way, but also require that similar clear notification shall be given to all patrons of public eating places and boarding houses. Arkansas and Missouri even prescribe that the dishes upon which margarine is served be clearly labeled with the term "oleomargarine." About one-half of the states prohibit the serving of margarine in state institutions, including, in some states, the state prisons. Thirty-one states prohibit outright the sale of colored margarine.

State license fees for margarine manufacturers and dealers are by no means new. Seventeen states now have such laws, seven having adopted them before 1930. In some states the fees are nominal. Thus, Minnesota assessed $1 per year against manufacturers, wholesalers, and retailers, and Utah collects $5 annually from wholesalers and retailers. In certain other states the charges are more substantial; some are not only higher than those assessed by the federal government, but cover a larger number of agencies. Thus, three states—

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[3] To a considerable extent these merely duplicate federal laws and regulations.

North Carolina, Pennsylvania, and Wisconsin—require $1,000 annually from each manufacturer. Montana collects a $400 annual license fee from retailers. Of all the states, none assesses more comprehensive license fees than Wisconsin. Not only do manufacturers pay $1,000 annually, but wholesalers must pay $500, retailers, restaurants, and hotels $25, boarding houses $5, and bakers and confectioners and individual consumers who buy in interstate trade must pay $1.

At least half the states now have excise taxes on margarine. Some of these apply only to margarine made from certain specified raw materials. Nine states have excise taxes on all uncolored margarine. Of these, Idaho, Iowa, and Utah[4] levy 5 cents per pound; Oklahoma,[5] North Dakota, South Dakota, and Tennessee, 10 cents per pound; and Washington and Wisconsin, 15 cents per pound.

THE "PROTECTIVE" PURPOSE OF MARGARINE LAWS

Although elimination of fraud was undoubtedly an important basis for much of the early margarine legislation, this obviously is not the object of the recent movement for high margarine sales taxes and license fees. The practice of passing off margarine as butter has practically disappeared in recent years.[6]

Generally those favoring margarine legislation have been frank to say that their object is to "protect" the dairy industry. When the Washington tax of 15 cents per pound was carried to the Supreme Court, the sponsors of the act candidly stated that their purpose was to help the butter industry and they made their arguments on that basis. The report of the South Dakota Tax Conference in 1931 typifies the attitude in butter-producing states. This report reads in part:[7]

"The South Dakota farmers and dairymen are developing a great dairy industry which should be encouraged and protected in every legitimate way. The use of substitute dairy products, such as oleomargarine, limits the use and lowers the market of butter.

"A tax of 10 cents per pound on butter substitutes will afford a measure of protection to the dairy interests and at the same time protect the general public from the use of substitutes inferior in every way to pure South Dakota butter.

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[4] Idaho and Utah double this rate if the margarine is colored.

[5] A 1937 amendment exempts margarine manufactured from "domestic" products from this tax. This law has not yet been put into effect and is now held up by a legal dispute.

[6] Based on an examination of the reports by the U. S. Department of Agriculture of violations of the Federal Food and Drug Acts.

[7] *Report of the South Dakota Tax Conference.* S. D. Div. of Taxation, Bul. 14, p. 14.

"This tax will operate to the benefit of the dairy industry in reducing the amount of such substitutes used, or, if the sale of butter substitutes is not curtailed, will be a fair revenue producer. As between the two possibilities, we would prefer that it operate in a reduction of the use of butter substitutes."

The recent wave of margarine excise laws exempting from taxation margarine made from "domestic" ingredients illustrates a new development of the protective principle in state margarine legislation. Until the close of World War I, oleo oil, a beef product, was the chief constituent of margarine. Gradually, however, vegetable oils were brought into greater use. Cottonseed oil became increasingly important as a margarine constituent. By 1915, cottonseed oil made up 30 per cent of the fats and oils used in the manufacture of margarine in this country. About that time the use of coconut oil began to increase rapidly, and, by 1933, 75 per cent of all fats and oils used in the manufacture of margarine came from this source.

The results of this technological change were reflected before long in federal and state legislation. Not only did the federal government place an excise tax of 3 cents per pound on coconut oil from the Philippines or other United States possessions in 1934,[8] but a curious new form of state margarine legislation flowered, especially in the cotton- and cattle-producing states. In the three years 1933–35, 14 states passed legislation providing in effect for an excise of from 10 to 15 cents per pound on margarine containing certain foreign ingredients.[9] Typical of these laws is that of Texas which provides for a 10 cent tax on margarine containing any fat or oil other than oleo oil, oleo stock, oleo stearine, neutral lard, corn oil, cottonseed oil, peanut oil, soybean oil, or milk fat.

More restrictive are the laws of certain important cattle-producing states outside the Cotton Belt. Thus, Minnesota, Nebraska, and Wyoming penalize cottonseed along with coconut and other foreign oils by providing for an excise tax on all margarine not containing a substantial percentage of animal fats.[10] Partly as a result of these various state laws, the percentage of foreign vegetable oil in margarine in the United States dropped from 55 in 1933 to 10 in 1941.

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[8] 5 cents per pound if from foreign countries.

[9] The actual wording of the laws usually specifies that margarine made from certain products is exempt from the tax. These products are "domestic" only in the sense that they are commonly produced in this country. In most cases they are also imported in considerable quantities.

[10] To be exempt from the excise tax, margarine must contain animal fats up to at least 65 per cent in Minnesota, 50 per cent in Nebraska, and 20 per cent in Wyoming. Minnesota and Nebraska also discriminate against foreign vegetable fats and oils.

EFFECTS OF MARGARINE TAXES ON CONSUMPTION

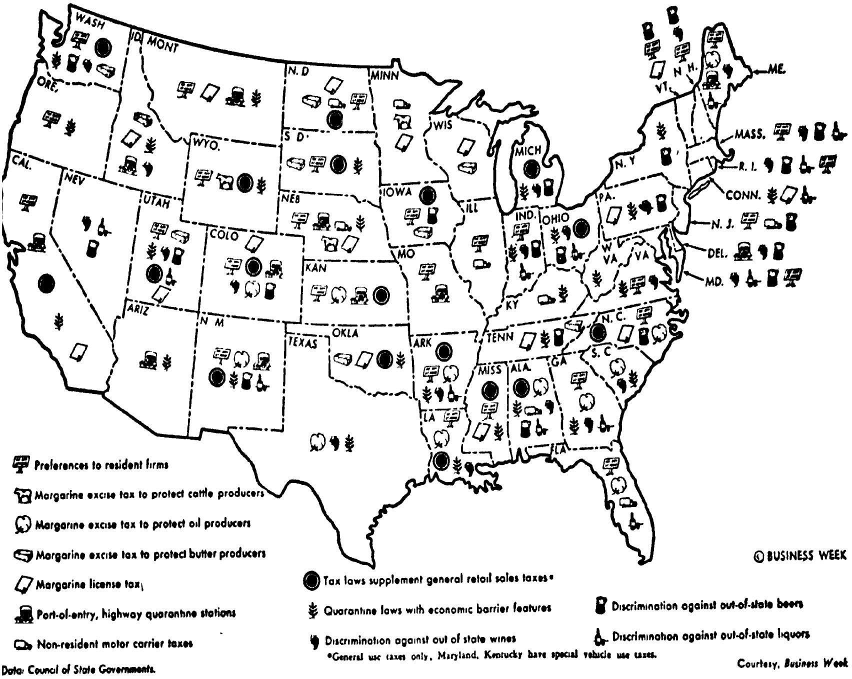
There are no statistics of the consumption of margarine by states, but a rough indication of the effect of the margarine taxes on consumption is given by a comparison of the figures on the number of retailers federally licensed to sell uncolored margarine in 1929 with the same figures for 1935. If the figures for the states taxing uncolored margarine are examined, it will be found that in those levying a tax of 5 cents a pound the number of retailers licensed to sell uncolored margarine dropped 52 per cent between 1929 and 1935; in those with a tax of 10 cents a pound, 91 per cent; and in those with a tax of 15 cents a pound, 99 per cent. In comparison, there was a 10 per cent increase in the states that have no excise taxes on uncolored margarine.

In the face of these figures, it is hard to doubt that the excise taxes on margarine effectively discourage consumption.

Probably no other measure that limits interstate trade has aroused so much resentment and active opposition as margarine taxes. Cottonseed oil is an important ingredient in the manufacture of margarine (40 per cent of the margarine in the United States in 1937 and 1941 was cottonseed oil), and cottonseed is an important source of cash income to southern farmers. Cotton farmers regard margarine taxes as an attack on their legitimate markets. They have threatened to impose retaliatory taxes on Wisconsin dairy products and other Wisconsin products. For example, the 1939 session of the Arkansas Legislature considered a bill that would have imposed a 25 per cent sales tax on milk, cream, butter, and apples grown in Wisconsin and three other states that have margarine taxes.

Perhaps the worst danger in margarine taxes is the possibility that their example will spread to other commodities. Having granted protection against outside competition to one industry, a state may soon find itself under considerable pressure to grant similar favors to other industries. If excise taxes may be used against margarine, why not also against other commodities that compete with state industries?

Here, indeed, would be a revival of the interstate tariffs that the framers of the Constitution were so anxious to eliminate from our national life. Figure 61 shows the prevalence of state barriers to trade in other products as well as dairy products.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MD.
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Preferences to resident firms
Margarine excise tax to protect cattle producers
Margarine excise tax to protect oil producers
Margarine excise tax to protect butter producers
Margarine license tax
Port-of-entry, highway quarantine stations
Non-resident motor carrier taxes
Tax laws supplement general retail sales taxes*
Quarantine laws with economic barrier features
Discrimination against out of state wines
*General use taxes only, Maryland, Kentucky have special vehicle use taxes.
Discrimination against out-of-state beers
Discrimination against out-of-state liquors
© BUSINESS WEEK

Data: Council of State Governments.

Courtesy, *Business Week*

FIG. 61—Trade barrier map of the United States as of April 1, 1939.

REGULATION OF THE SALE OF ALCOHOLIC BEVERAGES

Commerce between the states in alcoholic beverages is not subject to regulation by Congress. The Supreme Court said in a decision handed down early in 1939, that, "Since the Twenty-First Amendment, the right of a state to prohibit or regulate the importation of intoxicating liquor is not limited by the commerce clause."

Many states have moved quickly to turn this exemption to the advantage of their own brewing and distilling industries. Some have imposed heavier license fees on wholesalers or retailers who sell alcoholic beverages produced outside the state than on those who sell only home liquors. Some have imposed special sales taxes or "inspection fees" on out-of-state liquor, in addition to those imposed on liquor produced in the home state.

Agriculture has been directly affected by efforts of several states, in their regulation or taxation of the sale of liquor, to give their own farmers an advantage over other farmers. For example, Arkansas, Georgia, Michigan, and New Mexico place a higher sales tax on out-of-state than on domestic wines. Maine taxes materials produced outside the state but used by state wineries. North Carolina limits the sale of wine to the native product. Iowa, Minnesota, and Wisconsin require beer to be made from 66⅔ per cent or more of barley malt. Presumably the purpose is to discourage the use of substitutes for barley, particularly brewers' rice.

GRADING, LABELING, AND STANDARDIZATION MEASURES

Nonuniformity of specifications and requirements forms perhaps the most serious hindrance to interstate trade, as far as state grading and labeling laws and state standards are concerned. Hardly less serious, however, is the deliberate choice of specifications and requirements designed to place out-of-state products at a disadvantage when sold in competition with home-state products.

Nonuniformity among the states in grades, standards, or labeling requirements does not hamper interstate trade as long as they are not made compulsory. But nonuniform compulsory state requirements obviously are a potential source of countless annoyances and hindrances.

For example, one western state has promulgated compulsory grades for fruits and vegetables which are based on United States grades but differ in some particulars. This state refuses to accept certificates of inspection issued by the federal-state inspection service and insists on making its own inspection of all fruits and vegetables coming into the state by truck, charging a fee for the inspection. Another western state does the same thing, except that it does not charge an inspection fee. Many shipments of apples arriving from Washington by truck have had to be regraded and repacked at the California border because the Washington and California grades are not uniform.

A ludicrous but unhappy situation was created when Oregon made its berry-box standards compulsory for shipments out of the state, and California declared such boxes illegal within its borders.

Two examples will show how specifications or requirements may be chosen with an intent to place out-of-state produce at a disadvantage. Formerly some of the southeastern states required eggs to be classified as "Cold Storage," "Shipped," or "Fresh." Cold Storage eggs were those that had been in cold storage; shipped eggs, those that had not been in cold storage but had been shipped in from outside the state; and fresh eggs, those produced in the home state that had not been in cold storage and that were not "partially or wholly decomposed." Labeling so patently misleading could hardly fail to defeat its own purpose, but the purpose was plain: to prejudice consumers against out-of-state eggs.

Nonconformity is an ill that can be solved by consultation and cooperation among the states. Failing this, Congress can exercise its power to regulate commerce between the states by providing for federal grades to be used in interstate commerce in fruits and vegetables and other farm products not now covered by such legislation.

PLANT AND ANIMAL QUARANTINES

Agricultural quarantines are indispensable to American agriculture. They have proved themselves on occasion an effective means of preventing the spread of pests and diseases, and in many cases they have been a necessary part of successful efforts to completely eliminate pests and diseases from the United States.

Quarantines used for these purposes are legitimate and desirable, but there are a few quarantines that appear to be used for economic reasons—to protect in-state producers against competition—rather than to prevent the spread of a disease or pest.

Nonuniformity is another defect in some state quarantine regulations that tends to hamper interstate trade. Nonuniformity was perhaps to be expected when the states first undertook to protect themselves against threats of new pests and diseases. However, it is too serious a handicap to internal trade to be allowed to continue when uniform regulations can be just as effective, if not more so, in preventing the spread of pests and diseases.

A good beginning has already been made by the four Regional Plant Boards and the National Plant Board toward removing the defects present in some of the state quarantine regulations. These boards, consisting of state enforcement officials, meet periodically to review the regulations in force in the states represented. After a discussion of the factors involved, both from the point of view of the state imposing a regulation and from that of the other states affected, the boards often go on record as approving the regulation, recommending that it be rescinded, or recommending that it be amended in a certain way. The recommendations of the boards are nearly always followed, and as a result a great deal of progress has already been made toward achieving more uniformity among the state regulations and toward eliminating measures that are not well justified as means of controlling pests and diseases.

POSSIBILITIES FOR REMOVAL OF BARRIERS

How can the barriers to internal trade be removed? In the foregoing discussion a few suggestions have been made with respect to particular fields. In general, there seem to be three possible means: (1) action by the courts, (2) action by the states, and (3) action by the federal government.

Not all of the legislation under which barriers to internal trade have been established has been reviewed by the courts. It may be expected that some of it will be found unconstitutional. But much restrictive legislation already has been reviewed by the Supreme Court, and some of it has been approved. Some of the margarine excise taxes have run the gauntlet of the courts, even taxes so high that they produce virtually no revenue. The Court has ruled that the states are not bound by the commerce clause in regulating and taxing alcoholic beverages. The Court is not always guided by the economic effects of a measure in deciding whether or not in law it is an interference with the powers of Congress to regulate commerce between the states.

In brief, it is too much to expect that the Constitution will work automatically—that as soon as an unwise law, detrimental to interstate commerce, is passed, the courts will declare it void. What is required is a widespread and keen appreciation of the advantages and the importance of keeping our great national market open to all American producers and a greater sense of responsibility and accountability to the nation at large on the part of those who see some immediate gain for themselves in fencing off a corner of the national market and keeping their fellow citizens out of it. We can hardly hope to keep our federal system intact unless the various producer interests in each state accept the responsibility that is theirs not to urge upon their legislatures laws that are injurious to the nation as a whole or in contravention of the principles which have made it great, merely in order to snatch some quick and probably temporary advantage over competing producers in other states.

The chief responsibility for keeping internal trade in the United States free rests primarily, then, not on the courts but on the legislatures and administrative officials as representatives of the people.

There is room for considerable difference of opinion as to whether the federal government or the state governments should take the lead in getting rid of our present interstate trade barriers. But it would seem to be common sense that the problem is one needing cooperative action by both. There are some barriers, such as margarine taxes, that the states alone have the power to attack. Then there are some barriers that arise out of the difficulty that 48 different governments are bound to have in keeping together on a coordinated program. Problems of nonuniformity are of this nature, and it may be that some federal legislation may be needed to assist in the solution of problems of this kind. Action by the federal government, however, should be taken as part of a general program in which the states are collaborating. Many problems of nonuniformity can be solved by closer consultation and collaboration among state enforcement officials. The example of the Regional and National Plant Boards, whose activities are described above, would seem to be an excellent one to copy in other fields.

Many organizations of state officials have concerned themselves with internal trade barriers and are anxious to help remove them. The National Association of Directors, Secretaries, and Commissioners of Agriculture, the National Association of Marketing Officials, and the Governors' Conference all have gone on record as being opposed to trade barriers. The Council of State Governments, which officially represents 44 states, is holding a series of important conferences to consider the problem. With such full support of the states and with whatever assistance the federal government can render, the attack on internal trade barriers may confidently be expected to succeed.

CHAPTER 23

Reducing Marketing Costs by Cooperation

A considerable part of the agricultural marketing system in the United States is owned and operated by farmers themselves. Farmers' cooperative elevators, farmers' cooperative creameries, etc., are familiar examples of local farmer-owned marketing units. Some cooperative marketing agencies are state-wide or regional in scope; the California Fruit Growers' Exchange, Land O'Lakes Creameries, Inc., etc., occupy important positions in their trades.

These local, regional, and national cooperatives are marketing agencies. They sell their members' farm products. Other cooperative agencies, called purchasing associations, operate in the reverse direction; they *buy* farm supplies for their farmer members.

Taken all together, these agricultural cooperative marketing and purchasing associations add up to quite an impressive total. In 1943–44, 10,300 cooperative agricultural marketing and purchasing associations were active in the United States. Of that number, 7,522 were engaged primarily in marketing farm products; 2,778, or 27 per cent of the total, were engaged primarily in purchasing.[1]

Since 1929–30 the number of *marketing* associations has shown a steady decline, a total drop of more than 3,000. During the same period the number of *purchasing* associations increased from 1,454 to 2,778, a gain of more than 1,300. The net loss in numbers for the two kinds combined was 1,700.

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[1] Grace Wanstall, *Statistics of Farmers' Marketing and Purchasing Cooperatives, 1943–44 Marketing Season,* Misc. Rpt. No. 83, Coop. Res. and Serv. Div. Farm Credit Administration, USDA, October, 1945.

In addition to these cooperative commodity marketing and purchasing associations, about 2,000 mutual insurance companies provided over half of the farmers in the United States with protection from fire, wind, and hail losses. More than 800 rural electric cooperatives provided service to more than a million rural homes. More than 2,000 mutual companies with switchboards supplied farm families with telephone service. In the field of finance, 1,781 national farm loan associations, 514 production credit associations, and about 370 rural credit unions provided credit to farmers. And there were about 1,400 livestock improvement associations—sire, dairy herd-improvement, and artificial insemination groups. (Harold Hedges, "Farmer Cooperatives in War and Afterward," *Land Policy Review,* Winter, 1945, BAE, USDA, pp. 12–15.

The number of cooperatives of all kinds in existence in other countries is truly astounding. Europe leads with 300,000; Russia has 286,600; Asia has 167,500, etc. Most of these are agricultural cooperatives. (Cooperative Organizations and Post-War Relief, International Labor Office, Montreal, 1943.)

The total number of members of the marketing associations remained practically constant at 2,730,000, while the membership in the purchasing associations increased from 470,000 to 1,520,000.

The total dollar volume of business in 1943–44 was 4,430 million dollars for the marketing associations (86 per cent of the total) and 730 million dollars for the purchasing associations. The total was over 5 billion dollars. This was more than double the pre-war figures. A substantial part of this increase, however, reflects merely the wartime rise in price levels.

The changes that have taken place in the relative proportions of business done by the various commodity groups and the purchasing group are shown in Figure 62. This figure shows changes in the relative volume of business, not in the absolute volume.

WHAT IS A COOPERATIVE?

How are cooperatives any different from regular private business concerns?

The fundamental difference is that the cooperative is operated in the interests of its *patrons*, as an agency for marketing their products, while the private business concern is operated in the interests of the stockholders or other *owners*, as a means of making profits on their capital investment. The cooperative is run by and for those who use it, rather than by those who own it.

In a private concern, the patrons usually are not the owners. Very few Chevrolet drivers own General Motors stock; still fewer Ford drivers own Ford stock! By contrast, in a cooperative, most patrons are owners. But the cooperative is run in the interests of the owners as patrons, not in their interests as owners who want to make a profit on their investment.

In order to insure that the cooperative association will be run in the interests of its patrons rather than in the interest of its owners, the by-laws of the association usually include some of the "Rochdale principles of cooperation." These principles were established by one of the early associations, started by a small group of poverty-stricken flannel weavers at Rochdale, England, in 1844.[2]

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[2] The Rochdale Pioneers probably have been given too much credit for these principles. Other associations used some or all of them before the Rochdale Pioneers did, and important modifications have been made of the principles since 1844. But the name has become firmly established in the literature of cooperation

Here are the three most important of these principles:

1. ONE MAN, ONE VOTE

In order to keep the control in the hands of the patrons rather than those who put up the capital, control is allocated on the principle of "one man (member) one vote," not, as in a private concern, one share of stock, one vote.

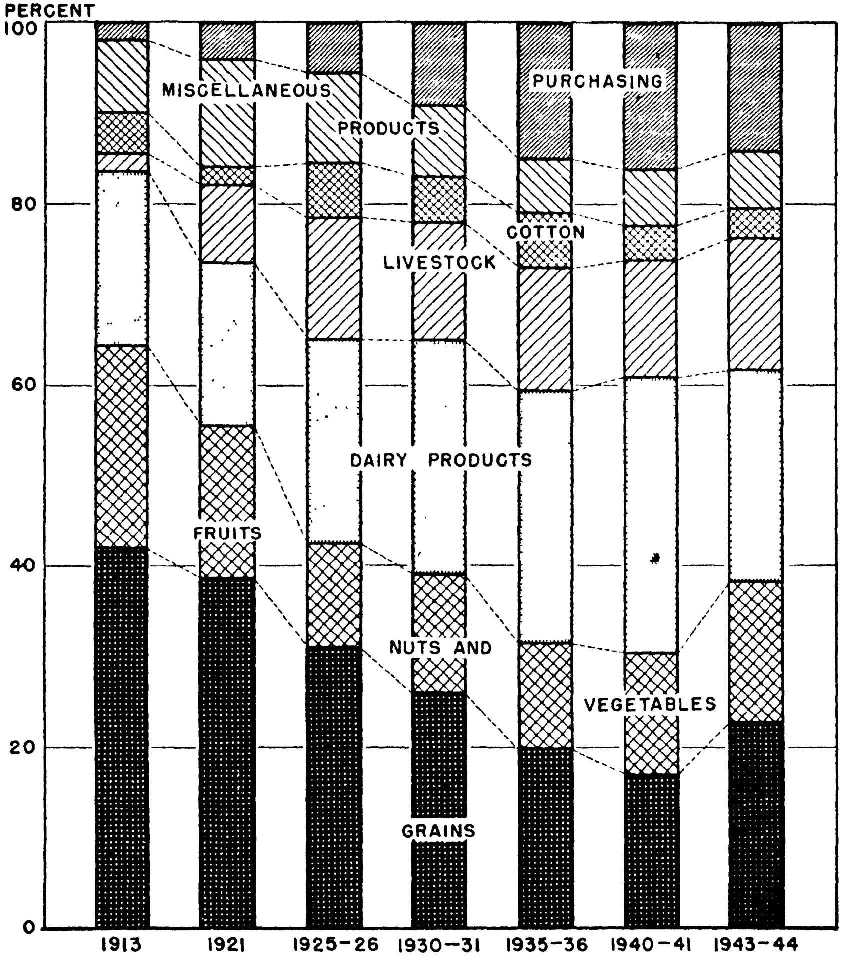

FIG. 62—Volume of business of farmers' cooperatives by commodity groups.

This principle was adopted 100 years ago, at a time when the wider extension of political democracy was a prominent public question; it reflects the influence of those times. From a strictly economic point of view, "one dollar of patronage, one vote" would be better. Where the patrons contribute roughly equal volumes of business, the results are about the same, and the "one man, one vote" procedure saves a lot of computation. Table 32 shows the extent to which cooperative associations in the United States use the "one man, one vote" and other bases of voting.

TABLE 32

Cooperative Associations in the Unitfd States Classified According to Basis of Voting, 1936*

	Number of Associations	Per Cent of Total
One member, one vote.....	9,219	86
Stock or other forms of equity..	1,335	12
Patronage..........	125	1
Other and unknown...	73	1
Total....	10,752	100

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* Ward W. Fetrow: *Three Principles of Agricultural Cooperation*, Farm Credit Administration, Cir. E-24, Washington, D. C., Undated.

Readers in search of detailed factual studies of specific agricultural cooperative marketing associations may obtain them by writing to the Farm Credit Administration and asking for a list of the numerous bulletins and circulars on cooperation that it has published over the past 15 years. This list enables one to select the particular bulletins that he wishes to study.

2. LIMITED RETURNS ON CAPITAL

The return on capital in most cooperatives is limited to some such figure as 5 to 8 per cent. Thus capital is paid for its hire but has no voice in the management.

The early cooperatives adapted private industry's capital stock as their instrument for raising capital. More recently, many cooperatives are using certificates of indebtedness, which automatically are issued to new patrons in return for deductions from their checks and automatically retired from those who cease to be patrons by payments from a revolving fund.

3. PATRONAGE DIVIDENDS

In a private organization, any excess of revenues over costs is distributed among the shareholders at the end of the quarter, year, or other accounting period in proportion to their holdings of shares. The excess is distributed as dividends on capital stock. In a cooperative, the excess is distributed among the patrons in proportion to their patronage. It is distributed as patronage dividends per dollar of business done.

Most cooperatives pay the "going price" for the products they handle, and then pay the patronage dividend at the end of the year, or at the end of the quarter, much as ordinary dividends on capital stock are distributed. A substantial percentage of the cooperatives (29 per cent in the United States in 1936[3]), however, pool their returns and pay their patronage dividends along with the payment for the products sold. Most cooperative creameries, for example, simply pay the patrons for their butterfat, at regular bi-weekly or monthly periods, all that the cooperative received for the butter, minus expenses; the patronage dividend is not set out as such but is merely part of the check for butterfat.

It would be interesting and instructive to trace the development and present status of cooperative marketing in the various commodity lines shown in Figure 62. The story of the struggles, accomplishments, and failures of cooperation reads like a historical novel. It teaches many lessons in economics, business, psychology, and politics. That story, however, is too long even for a whole book. It already has been told by many authors in many books over the past 100 years. A partial bibliography is afforded by the footnote references in the rest of this chapter. Here we have space to present only the essential principles of cooperation, to analyze the place and purpose of cooperation, and to show what it can and can not do to reduce the costs of marketing.

WHY DO FARMERS FORM COOPERATIVE MARKETING ASSOCIATIONS?

Farmers set up their own cooperative marketing associations because they want them to be run in their interests as patrons, rather than in their interests as owners and contributors of capital. They want marketing done in the interests of the producers, rather than of the middlemen who own the regular private marketing business.

This is rather a general objective. Specifically, what do farmers expect to accomplish when they set up and run their own cooperative marketing agencies?

The original objectives of cooperation in the early days in England, from the time of Rochdale (consumers') cooperation in 1844, were "production for use," and "the elimination of private profit."

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[3] Farm Credit Administration, Cooperative Division, *A Statistical Handbook of Farmers' Cooperatives,* Washington, D. C., Bul. 26, November, 1938, p. 36.

The consumer cooperators set out to reform or reconstruct the entire capitalistic system, with consumers, through their cooperatives, reigning supreme.[4]

Some consumer cooperative leaders in the United States still retain this view.[5] Agricultural cooperative leaders, however, hold quite different views. "Farm cooperatives have no such objective. Farmers are essentially capitalistic. Their pride of ownership is strong. This is true even of most tenant farmers. Their chief complaint against the established order is that it has not enabled them to be better capitalists—to own more.

FARMERS' OBJECTIVE IS LARGER PROFITS

"Their reason for cooperative endeavors, whether buying or selling, is not to eliminate private profit, but to get more profit for themselves. They attempt to do this on the one hand by buying supplies cheaper; on the other by getting a greater net return from what they produce.

"This distinction in ideology is so marked that many European cooperative spokesmen refuse to classify farm cooperation as real cooperation at all. They say it is merely a modified form of capitalism, and as such they do not like it."[6]

Other opinions by agricultural cooperative leaders are equally simple and clear. "It should be apparent that to the farmer cooperation is business. Farm cooperatives are business institutions."[7] "The main purpose of the cooperative association is to make money for its members. For this purpose any lawful policy which is profitable is right and any policy which is unprofitable is wrong."[8] And most bluntly of all, "I regard a farmer-owned, farmer-controlled cooperative as a legal, practical means by which a group of self-selected, selfish capitalists seek to improve their individual economic positions in a competitive society."[9]

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[4] Sidney and Beatrice Webb, *The Consumers' Cooperative Movement,* Longmans, Green and Co., London, 1921.

[5] For a highly inaccurate and confused statement of an otherwise good case, see the address by E. R. Bowen, Secretary of the Cooperative League, American Cooperation, 1937, pp. 127–38, American Institute of Cooperation, Washington, D. C.

[6] C. V. Gregory, "The Distinction Between Producer and Consumer Cooperatives," *American Cooperation, 1937,* p. 139, American Institute of Cooperation, Washington, D. C.

Sidney and Beatrice Webb, *op. cit.* say (pp. 414–20) "Agricultural cooperation . . . forms . . . no rightful part of the consumers' cooperative movement."

[7] Robin Hood, "Lessons We Have Learned," National Cooperative Council, *Cooperative Journal,* September-October, 1936.

[8] Frederick V. Waugh, "Grades—What the Public Wants and Can Pay For," *News for Farmer Cooperatives,* January, 1941, p. 10.

OBJECTIVE—MARKETING SERVICES AT COST

The objective of agricultural cooperation, therefore, is not to eliminate profits as such, but to divert them from the owners to the patrons. This in effect provides farmers with marketing services at cost.

This objective usually is limited to the diversion of middlemen's profits to farmer patrons. As shown above, most farmer cooperative leaders object to the extension of the principle to the diversion of distributors' *and producers'* profits to ultimate consumer patrons.

In a perfectly competitive economy, profits would continually tend to zero, and the part that cooperation could play would be small. Its objective—marketing services at cost—already would be attained.

It is precisely because many parts of our existing economy are *not* perfectly competitive, however, that cooperation has such a useful part to play. In many cases, the size of the most efficient unit is so large relative to the size of the market that the business becomes concentrated in the hands of a few large and efficient operators. The laws of atomistic competition do not have a chance to work, and charges remain considerably higher than costs.

Most local markets for farm products, for example, are small. One buyer in each market could handle the job more efficiently (at lower cost) than several buyers dividing up the business among themselves. Yet one buyer would have some degree of monopoly control, and naturally could be expected to try at least to keep most of the benefits of his efficiency for himself rather than pass them on in the form of low margins. Thus a single buyer would try to charge nearly as much for his services as each one of several buyers. He might charge more.

In that situation, farmers prefer to have more than one buyer on the market, to establish some semblance of competition. Yet this is not a satisfactory solution. For if the number of buyers is small, they are apt to follow a policy, if not of actual collusion, at least of "live and let live"—something considerably short of competition; while if the number of buyers is large, that divides up the business so much that the small volume of business results in high costs, often made still higher because of the time and money each buyer spends in soliciting business away from the other buyers.

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[9] H. E. Babcock, "Cooperatives, the Pace-Setters in Agriculture," *Journal of Farm Economics*, Vol. XVII, No. 1, February, 1935.

A better solution is for farmers to set up a marketing agency of their own, charge the going rate, and return the excess of that rate over costs to its patrons in the form of patronage dividends. That gives them marketing services at cost.

FURTHER OBJECTIVE—REDUCING COSTS

The greatest opportunities for cooperatives, however, lie not in the field of diverting profits but in the field of reducing costs.

In most cases, profits are small potatoes; where they are large, they are usually fleeting. It was estimated in Chapter 14 that total profits all along the line from producer to consumer amount to only about 3 cents of the consumer's dollar.

Furthermore, a considerable share of what is usually called profits actually is costs. American Telephone and Telegraph, for example, made a net profit of 190 million dollars in 1939. At that time they had 16 million telephones in service. Does that mean that they could have paid a patronage dividend of nearly $12 per telephone? It does not, because a good share of the so-called "profit" was actually a cost. It was interest on investment. If a company makes a "profit" of 10 per cent on its investment, that 10 per cent cannot all be paid away in patronage dividends, for something like half of it is interest on the money invested in the business. If prospective investors could not expect any return on their investment, they would not put their money into the business, and the business would not be able to start. It could run on borrowed money (bonds), but in that case it certainly would have to pay interest on the bonds as a cost. Even if cooperators agree to put up the money and get no return on it, that simply means that a good share of the patronage dividends they receive is interest on their investment and not patronage dividends at all.

In any case, the greatest opportunities for cooperatives lie not in the small area of profits but in the large area of costs. A reduction of say 10 per cent in costs would amount to far more than the complete elimination (diversion) of middlemen's profits.

How can cooperatives reduce costs? They have to pay a manager and other hired help, the same as any other business. They have to pay rent, heat, light, and other bills. How can they operate at any lower cost than competing private concerns?

Many cooperatives have found that they could not operate at lower cost than competing private concerns. They found that a large share of what they called profits was really costs, and that they could not reduce those costs.

In most cases, however, cooperatives are in a good position to reduce costs, for two or three specific reasons. Their costs of advertising and other forms of solicitation should be lower than the costs of private businesses. Cooperatives also are in a position to reduce costs by handling products in larger volume than their private competitors. Farmers can see the advantage of patronizing their own agency, when that patronage increases volume and reduces costs, and those lowered costs are passed directly on to them in the form of patronage dividends. In a situation where the volume of business required for efficient operation is large relative to the size of the market, monopoly or oligopoly is likely to result. Cooperation is one of the few ways by which such situations can be rendered harmless. Cooperation cannot only divert the profits being made by private agencies; it can reduce costs substantially by reducing competitive wastes and by virtue of the large volume of business that a cooperative can build up—a larger volume than would be safe in the hands of a private agency.

IMPROVING MARKETING PRACTICES

Finally, there are many marketing situations in which dealers can make the most money by following practices that are adverse to farmers' interests. Some dealers, for example, believe that they can make more money buying eggs on an ungraded basis and sorting and grading them for their trade, than they can by buying eggs on grade from the farmer in the first place. Perhaps they are right. But when no incentive is offered to farmers for high grade produce, the quality of the product is low and farmers' interests suffer. Again, grain growers' interests might be better served if the identity of different grades or even car lots of grain were preserved clear through from the farm to the miller. But if grain dealers can make more money by mixing and blending grain, they will proceed to do so regardless of the farmers' interests in the matter. And if feed mixers or fertilizer companies can make more money by certain practices which are of no value to or are actually deleterious to farmers' interests, there is no assurance that they will not follow them. But farmer cooperatives set up in these fields can be made to operate in farmers' interests.

Cooperation, therefore, is one simple, effective, non-governmental means for preventing or reducing monopoly, for reducing costs that monopolistic situations usually entail, and for controlling exploitive practices on the part of the trade.

SOME LIMITATIONS OF COOPERATION

The preceding section has outlined the part that cooperation can play in reducing marketing costs. It has shown what cooperation can do. It also is necessary to point out what cooperation cannot do.

Some agricultural cooperatives in the United States during the 1920's developed the slogan "commodity control." Their objective was to get control of all of a commodity. They wanted to get all of a commodity marketed through a cooperative; then that cooperative could set the price.

The fallacy of this slogan should have been obvious, but a lot of cooperative effort was wasted on it, and high percentage sign-ups were considered an essential part of many campaigns. It should have been obvious that no matter how high a percentage of a crop was marketed through cooperative hands, the price would remain the same so long as the same quantity was produced and sold. The only way the cooperative could raise the farm price and still sell the same quantity of the crop would be for it to handle the marketing of the crop at lower cost than the private trade would handle it; but for that purpose a cooperative would not need control of any particularly high percentage of the crop, but only enough for efficient low-cost operation. Only if "commodity control" included destruction or diversion of part of the crop to lower uses could it raise prices in a monopolistic way. Such attempts as were made to exercise "commodity control" of that sort quickly broke down. The growers who stayed out of the schemes got the benefit of the rise in prices without incurring the costs, and this set up a strong incentive not to belong to the cooperative. The idea of commodity control still persists in some cooperative quarters, but unless it is backed up by some control over production—which requires other than voluntary cooperation—it is a will-o'-the-wisp that cannot be caught.

Some internal operating problems also limit the sphere of effective cooperative action. Where it is difficult to get accurate grade and price reports, it is difficult for a cooperative to show just how much, if at all, it is reducing marketing costs for its members. Thus many livestock cooperatives find it difficult to attract or retain members, even when they are saving money for them; whereas cooperative creameries have less trouble, because their produce is pretty well standardized and fairly accurate price comparisons can be made.

Finally, it is difficult for an agricultural cooperative to get into operations that take it very far from its membership. That is why most agricultural cooperatives are local cooperatives; the members can take an active part in its operations, because they relate to familiar problems close at hand. They have more trouble, for example, dealing with manufacturing problems requiring large aggregations of capital and technical business judgments beyond the experience of farmer directors.

This problem can be handled by federations of local cooperatives, and some progress is being made along those lines. But federations of that sort have an uphill job. They are cumbersome and likely to lack the flexibility and capacity for rapid adjustments that is required for most large-scale business undertakings. The farther they get from their local patrons, the less likely they are to succeed. Cooperative meat packing plants, for example, have been a success in Denmark; they are small scale (averaging about 80,000 head annual slaughter) they put up a simple product (Wiltshire sides) and sell mostly to one outlet (the British market). But in the United States, packing houses are much larger than in Denmark. They process their meat into many different cuts and products, and sell to many outlets. And cooperative packing houses have uniformly failed in the United States, with the single exception of one plant which is struggling along only with great difficulty.

In effect, farmers who set up marketing or purchasing cooperatives integrate those marketing services with their production operations on the farm, much as Ford integrates his sales organization and parts of his raw materials procurement with his manufacturing operations. Ford does it as an individual corporation, because his business is big enough to permit him to do so; farmers have to cooperate among themselves in order to get a big enough volume of business to permit their marketing organization to operate at an efficient size. The family size farm is an efficient size for production, but not for marketing. Private marketing businesses are usually large enough to operate efficiently, and if they do the job properly from the farmer's point of view, he has no need to get into their field. But if they do not, he can bring together a large enough volume of business, by cooperation, to do his own marketing.

THE LEGAL STATUS OF COOPERATION IN THE UNITED STATES[10]

When the Sherman Anti-Trust Act was passed in the United States in 1890, some of the legislators foresaw that it might be used, in a manner that was not intended, to break up cooperative associations and labor unions as "combinations in restraint of trade". Senator Sherman even proposed an amendment to his bill exempting these two groups from action under his bill. But the bill was finally passed without any exemptions.

It was not long before farmers' cooperatives began to have trouble with the Sherman Act. In 1895, a milk producers' association of 1,500 farmers in the Chicago territory was indicted under the Illinois state anti-trust law of 1891, and declared by the state court to be a combination in restraint of trade and therefore unlawful. Again, in 1913, a local livestock shipping association in Iowa got into trouble, because its members agreed to ship all their hogs through the association, or pay a "maintenance fee" of 5 cents per 100 pounds to the association for any hogs they shipped through any other agency. Action was brought against the association by a local private dealer, and sustained finally by the Iowa Supreme Court. From 1895 to 1910, cooperatives were indicted in five states under state anti-trust laws, and in Louisiana under the Sherman Act.

By 1914, agricultural cooperatives had become numerous, and the Act had caused them so much trouble that the Clayton Amendment was passed. This amendment exempted from the Sherman Act "labor, agricultural, or horticultural associations, instituted for the purposes of mutual help, and not having capital stock or conducted for profit."

This amendment represented a distinct step forward, but it was unsatisfactory on two counts. In the first place, it was phrased in terms of the definition of the purposes, financial set-up, and membership of the association, not in terms of the practices followed by the association. The amendment therefore did not protect a farmers' association from being haled into court because of its actions; it only protected it from being prosecuted on the basis of its type of organization.

In the second place, the Clayton Amendment protected only cooperative associations "not having capital stock". This may have been unintentional, or it may have been done to restrict the amendment to what was considered the "purest" (non-stock) type of cooperative. But many perfectly good cooperatives had capital stock, and they were accordingly not protected by the amendment.

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[10] See E. G. Nourse, *The Legal Status of Agricultural Co-Operation*, The Institute of Economics of the Brookings Institution, MacMillan Company, New York, 1928, and H. H. Bakken and M. A. Schaars, *Economics of Cooperative Marketing*, McGraw-Hill Book Company, 1937, Chapter 11.

In 1922, therefore, the Capper-Volstead Act was passed, exempting associations of "persons engaged in the production of agricultural products, as farmers, planters, ranchmen, dairymen, or fruit growers . . . corporate or otherwise, with or without capital stock, . . . *Provided, however,* that such associations are operating for the mutual benefit of the members thereof as such producers and conform to one or both of the following requirements: first, that no member of the association is allowed more than one vote because of the amount of stock or membership capital he may own therein; or, second, that the association does not pay dividends on stock or membership capital in excess of 8 percentum per annum." The associations, however, were permitted to deal in the products of non-members to an amount equal to those handled for members.

The Act states further: "That if the Secretary of Agriculture shall have reason to believe that such association monopolizes or restrains trade to such an extent that the price of any agricultural product is unduly enhanced by reason thereof, he shall serve upon such association a complaint stating his charge in that respect, to which complaint shall be attached, or contained therein, a notice of hearing, specifying a day and place, not less than thirty days after the service thereof, requiring the association to show cause why an order should not be made directing it to cease and desist therefrom. An association so complained of may at the time and place so fixed show cause why such order should not be entered. The evidence given on such a hearing shall be reduced to writing and made a part of the record therein. If upon such hearing the Secretary of Agriculture shall be of the opinion that such association monopolizes or restrains trade to such an extent that the price of any agricultural product is unduly enhanced thereby, he shall issue and cause to be served upon the association an order reciting the facts found by him, directing such association to cease and desist therefrom. . . The Department of Justice shall have charge of the enforcement of such order."

Thus the Act is designed both to protect agricultural cooperatives from unwarranted prosecution under the Sherman Anti-Trust Act, and to protect consumers from any misuse by the cooperatives of their new powers.

FEDERAL TAX EXEMPTIONS PROVIDED

A federal corporate tax law as early as 1898 stated that the tax did not apply to agricultural organizations operated only for the mutual benefit of members. The Income Tax Law of 1916 also exempted farm cooperatives. These exemptions have been continued and made clearer in the income tax laws which are in effect today.

Section 101 (12) of the Internal Revenue Code now provides for the exemption of duly qualified farmers' cooperative associations from the payment of corporation income taxes, the stamp tax on capital stock, and the excess profits tax. The requirements which farmer cooperatives must meet in order to qualify for exemptions under these tax laws are similar to those of the Capper-Volstead law. Cooperatives are not automatically exempt under these tax laws. They must apply to the Bureau of Internal Revenue for exemption status. If this application is approved, after their case has been scrutinized, they receive a "letter of exemption", under which they do not have to pay corporation income taxes.

Some private business leaders have objected to this exemption of cooperatives from the payment of corporation income taxes. They contend that patronage dividends are the same as profits, differing only in that they are paid to patrons instead of owners (on capital), and that they should be taxed the same as profits.

To this charge, the cooperatives have one effective answer. They say that patronage dividends are not profits at all, but merely refunds of over-charges paid at the end of the year instead of in the form of lower charges at the time the service is rendered. They say that the word "exemption" is a misnomer; cooperatives pay no income taxes because they have no income to tax.

In those cases where patronage dividends are distributed currently, in the form of higher prices for products sold or lower prices for goods purchased through the association, as is common practice in "pooling" cooperatives, the question of taxability does not arise at all. If the present exemption law were changed, and patronage dividends were taxed, other cooperatives could pay their dividends out currently in the form of higher or lower prices for the products they handle. This would intensify rather than reduce price competition, and displease rather than please those who now object to cooperative exemption from income taxation.

Cooperatives can sum up their case in these words: They distribute everything above costs to their patrons. Let private industry do the same, and it will not have to pay any corporate income taxes.

AGRICULTURAL COOPERATION VERSUS CONSUMER COOPERATION

Agricultural cooperation as a method for reducing the costs of marketing farm products is subject to one important limitation. It is applied mostly to the part of the marketing system that is closest to the farmer—to local creameries, local grain elevators, local livestock marketing associations, etc. But the marketing costs at the farmer's end of the marketing system take a relatively small part of the consumer's dollar. As shown in Chapter 15, the biggest share of the consumer's dollar goes to the retailer.

Farmers have directed most of their cooperative activities to selling, and only recently, on a smaller scale, to purchasing; and their purchasing has been limited mostly to supplies used in production—concentrate feeds, fertilizer, fencing, tractor and truck fuel, etc. Farmers have not done much cooperating as ordinary consumers of household products; that part of the field has been left mostly to urban consumer cooperatives, whose philosophy, as shown above, is different from and in some respects opposed to the philosophy of farmer cooperatives.

Is agricultural cooperation going to remain limited chiefly to local selling and handling activities, and stay out of retailing? Is it going to remain aloof from consumer cooperation or antagonistic to it?

These are interesting questions to speculate upon. They come to a sharp focus at present only in connection with farmers' cooperative purchasing associations, but they loom in the background of the marketing cooperatives too.[11]

Farmers' purchasing associations handle a good deal of gasoline, oil, and other petroleum products, and the private distributors of those products have fought back by slashing their prices in territories served by farmers' purchasing cooperatives operating tank trucks, in many cases 3.5 and 4 cents less than the price at filling stations. This leaves barely enough to cover costs. The oil companies can do this so long as they have the profits from the filling station trade, refining, pipelines, etc., to keep them going. The farmers' purchasing cooperatives may have to get into the filling station business themselves, as they have in some cases already gone into refining, drilling, and pipelines. They know that farmer-owned filling stations could not command loyal urban support, and they see the advantage of cooperating with urban people. Similar conditions exist with respect to other goods handled by purchasing cooperatives—coal, lumber, flour, etc.

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[11] For two somewhat divergent views concerning these questions, see Ellis Cowling, *Cooperatives in America, Their past, Present, and Future,* Coward-McCann, Inc., New York, 1938, Chaps. 5 and 10, and Prof. R. K. Froker, *Conflicting Interests in Cooperatives,* at the annual meeting of the Wisconsin Council of Agriculture Cooperatives, November 6, 1945, Madison, Wisconsin.

The need for a broader base for cooperative action is less evident in the case of farmers' marketing cooperatives. But even there, the steady trend away from self-sufficiency in agriculture is making farmers more consumer-minded. For as they no longer "grow their own wool and wear it" but buy their clothes and most of their food from the store, they are steadily becoming more like urban consumers. Farmers who have done well with purchases of fuel and other farm supplies on a cooperative basis are not likely to turn a blind eye upon purchases of food and clothing. This would require cooperation with urban consumers even more than a cooperative filling station would. It seems likely that the future lies with cooperation between producer and consumer groups rather than with conflict between them.

CHAPTER 24

Reducing the Costs of Retail Distribution

The retail market is located at the far end of the marketing system from the farmer. Farmers frequently overlook it, or give it very little attention, because it is so remote. But retailing is the most important of all marketing functions. As shown in Table 25, Chapter 15, retailing takes 24.5 per cent of the consumer's dollar. It takes a larger share out of the consumer's dollar than any other marketing function; in many cases it takes a larger share than all other marketing costs combined. The retail margins for most fresh fruits and vegetables, for example, usually range between 35 and 40 per cent of the retail price.

The large size of the retailer's margin had led some observers to conclude that retailing must be inefficient, or retail profits exorbitant, or both. This is an error. The size of the margin in itself does not necessarily show anything of the kind. It does show, however, that retailing is a costly operation, and that any significant reductions that can be made in retailing costs will represent an appreciable proportion of the consumer's dollar.

Reductions in marketing costs at the retailing end of the distributive system eventually benefit farmers as much as reductions at their own end of the system. The sequence of events is something like this: Some enterprising retailer figures out a new method of handling beans, for example, in such a way as to reduce his handling cost by say 10 per cent of the retail price. At first, he can keep that 10 per cent saving to himself. Bean producers and consumers both continue to pay and receive the same prices as before.

Sooner or later, however, things will begin to happen. Either the retailer will reduce the price of beans to the consumer, on his own initiative, in order to increase his sales (mostly by taking business away from his competitors, for the demand for the beans that he handles is more elastic than the demand for the beans in the city as a whole), or his competitors will begin to adopt his more efficient methods, eventually cutting prices until the margin on beans is reduced about in line with the margins on other comparable products.

At those lower prices, they will sell more beans than before. They will then pay higher prices for beans in the wholesale markets or country markets in order to get more beans. If the supply of

TABLE 33

MARK-UP FIGURES TO BE USED BY WHOLESALERS IN FIGURING CEILING PRICES FOR ITEMS COVERED BY THIS REGULATION BY COMMODITIES

	Figures to Be Multiplied by Net Cost			
	Class 1	Class 2	Class 3	Class 4
Food Commodities	Retailer Owned Cooperatives	Cash and Carry	Service and Delivery	Institutional
1. Baby foods.	1.06	1.085	1.135	1.185
2. Cereals, breakfast.	1.035	1.06	1.08	1.13
3. Cocoa, chocolate and cereal drink preparations.	1.07	1.085	1.125	1.175
4. Coffee.	1.055	1.065	1.09	1.14
5. Cookies, crackers, toast and crumbs,	1.11	1.15	1.20	1.25
6. Corn meal and hominy. .	1.055	1.085	1.12	1.165
7. Dog and cat foods	1.06	1.09	1.105	1.15
8. Fish, processed	1.095	1.13	1.19	1.24
9. Flour and flour mixes.	1.07	1.075	1.10	1.15
10. Fruits, berries, fruit juices (canned) except fruit cocktail, pineapple, peaches, and pears.	1.105	1.155	1.18	1.23
11. Fruit cocktail, pineapple, peaches, and pears (canned) except juices . . .	1.06	1.085	1.135	1.185
12. Fruits, dried and dehydrated. . .	1.055	1.125	1.165	1.215
13. Frozen foods.	1.24	1.24	1.24	1.29
14. Gelatin and pudding mixtures. .	1.06	1.07	1.105	1.155
15. Jams, jellies, preserves, honey, and peanut butter.	1.115	1.14	1.19	1.24
16. Lard, pure. . .	1.035	1.035	1.075	1.125
17. Macaroni and spaghetti products. .	1.09	1.115	1.15	1.20
18. Mayonnaise and salad dressing.	1.08	1.12	1.16	1.21
19. Meat, canned. . . .	1.055	1.08	1.10	1.15
20. Milk, canned . . .	1.035	1.035	1.045	1.095
21. Oils, cooking and salad. .	1.07	1.075	1.10	1.15
22. Oleomargarine.	1.045	1.085	1.14	1.19
23. Pickles and relishes . .	1.115	1.14	1.19	1.24
24. Rice.	1.075	1.095	1.13	1.18
25. Shortening, hydrogenated	1.045	1.045	1.06	1.06
26. Shortening, other. .	1.045	1.045	1.06	1.06
27. Soups, canned.	1.045	1.07	1.09	1.14
28. Soups, dehydrated. . .	1.06	1.105	1.13	1.18
29. Spices. . .	1.15	1.27	1.28	1.33
30. Sugar. . .	1.02	1.02	1.04	1.04
31. Syrups.	1.07	1.10	1.115	1.165
32. Tea.	1.06	1.095	1.115	1.165
33. Vegetables and vegetable juices (canned) except corn, green and wax beans, peas, tomatoes, and tomato juice.	1.07	1.14	1.20	1.25
34. Corn, green and wax beans, peas, tomatoes and tomato juice (canned). . . .	1.06	1.085	1.135	1.185
35. Vegetables, dried and dehydrated.	1.08	1.09	1.12	1.17
36. Vinegar.	1.12	1.16	1.23	1.28
37. Miscellaneous foods.	1.11	1.15	1.20	1.25
Simple average.	1.07	1.10	1.14	1.18

beans is about as elastic as the demand for beans, the original 10 per cent reduction in cost will be divided 50-50 between higher prices paid to farmers and lower prices charged to consumers. If the supply is less elastic than the demand, farmers' prices will rise more than consumers' prices fall; and conversely (see Appendix C).

WHOLESALE AND RETAIL MARGINS

A good measure of the width of wholesale and retail margins is provided by the mark-ups allowed by the OPA to different kinds of stores during World War II. These mark-ups were set so as to reflect as closely as possible the current practices in the trade.

TABLE 34

MARK-UPS OVER "NET COST" ALLOWED TO GROUP 1, GROUP 2, GROUP 3, AND GROUP 4 RETAILERS FOR DRY GROCERIES COVERED BY THIS REGULATION, BY COMMODITIES

(Per Cent)

	Independent Retailers With Annual Volumes		Group 3. Retailer Other Than Independent, With Annual Volume Under $250,000	Group 4. Any Retailer With Annual Volume of $250,000 or More
Food Commodities	Group 1. Under $50,000	Group 2. $50,000 But Less Than $250,000		
1. Baby foods	25	23	21	19
2. Cereals, breakfast	22	20	13	11
3. Cocoa, chocolate, and cereal drink preparations	29	29	22	21
4. Coffee	17	17	12	11
5. Cookies, crackers, toast and crumbs	25	25	25	25
6. Corn meal and hominy	29	29	25	21
7. Dog and cat foods	27	27	21	19
8. Fish, processed	27	27	21	21
9. Flour and flour mixes	27	27	23	15
10. Fruits, berries and fruit juices (canned) except fruit cocktail, pineapple, peaches and, pears	26	26	24	22
11. Fruit cocktail, pineapple, peaches, and pears (canned) except juices	25	23	21	19
12. Fruits, dried and dehydrated	27	25	23	22
13. Frozen foods	27	27	27	27
14. Gelatin and pudding mixtures	28	25	21	13
15. Jams, jellies, preserves, honey, and peanut butter	32	32	31	31
16. Lard, pure	20	18	13	10
17. Macaroni and spaghetti products	32	32	27	26
18. Mayonnaise and salad dressing	24	24	22	22
19. Meat, canned	21	21	15	14

TABLE 34—*Continued*

	Independent Retailers With Annual Volumes		Group 3. Retailer Other Than Independent, With Annual Volume Under $250,000	Group 4. Any Retailer With Annual Volume of $250,000 or More
Food Commodities	Group 1. Under $50,000	Group 2. $50,000 But Less Than $250,000		
20. Milk, canned	20	20	10	9
21. Oils, cooking and salad	28	28	24	16
22. Oleomargarine	17	15	14	14
23. Pickles and relishes	32	32	31	31
24. Rice	28	28	24	20
25. Shortening, hydrogenated	9	9	7	6
26. Shortening, other	18	18	13	9
27. Soups, canned	27	26	19	19
28. Soups, dehydrated	34	34	31	27
29. Spices	46	46	46	46
30. Sugar	17	12	7	6
31. Syrups	28	28	24	21
32. Tea	26	26	25	23
33. Vegetables and vegetable juices (canned) except corn, green and wax beans, peas, tomatoes, and tomato juice	31	31	26	23
34. Corn, green and wax beans, peas, tomatoes, and tomato juice (canned)	25	23	21	19
35. Vegetables, dried and dehydrated	36	36	34	29
36. Vinegar	39	34	27	26
37. Miscellaneous foods	40	40	35	35
Simple average	26.8	26.0	22.3	20.2

Table 33 shows the mark-ups allowed for the four main types of wholesalers. The simple average mark-up for each kind of wholesaler (not given in the original OPA table) is shown at the foot of the table. It provides a measure of the relative width of the margin for each kind of wholesaler.[1]

The OPA mark-ups over net cost allowed to the four different sizes and kinds of retail stores for dry groceries and for perishables are given in Tables 34 and 35. Table 34 shows the mark-ups for "dry groceries." Table 35 shows the mark-ups for perishables. It is itself divided into two parts, one giving mark-ups in percentages for some products and the other giving mark-ups in cents for other products.[2]

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[1] OPA, MPR 421, February 3, 1945.

[2] OPA, MPR, 422 and 423, February 3, 1945.

TABLE 35a

MARK-UPS OVER "NET COST" ALLOWED TO GROUPS 1, 2, 3, AND 4 RETAILERS FOR PERISHABLES COVERED BY THIS REGULATION, BY COMMODITIES

Food Commodities	Independent Retailers With Annual Volumes		Group 3 Retailer Other Than Independent With Annual Volume Under $250,000	Group 4. Any Retailer With Annual Volume of $250,000 or More	"Selling Unit" on Which Ceiling Price Must Be Calculated
	Group 1. Under $50,000	Group 2. $50,000 But Less Than $250,000			
	Per cent	*Per cent*	*Per cent*	*Per cent*	
(1) Dairy products:					
Butter	10	10	8	8	1 pound
Cheese	27	27	24	22	1 pound or 1 package
Eggs, shell	17	15	14	12	1 dozen
(2) Fresh fruits:					
Apples	33	33	33	33	2 pounds
Bananas, bought on the stem	43	43	34	34	1 pound
Bananas, bought in hands	34	34	25	25	1 pound
Berries	34	34	34	34	1 quart, 1 pint, or 1 pound
Citrus fruits	39	39	36	36	1 dozen or 5 pounds (grapefruit, 1 grapefruit or 1 lb.)
Red sour cherries	34	34	34	34	1 quart or 1 pound
(3) Fresh vegetables:					
Cabbage	40	40	40	40	2 pounds
Lettuce	40	40	40	40	1 head or 1 pound
Onions, dry	40	40	40	35	3 pounds
Potatoes, sweet	40	40	40	40	2 pounds
Potatoes, white	33	30	30	28	5 pounds
Tomatoes	40	40	40	40	1 pound or 1 package
Vegetables in unbroken packages	40	40	40	40	1 package

TABLE 35a—*Continued*

(4) Poultry:					
Poultry (except turkey) sold as purchased: bought live and sold live, bought dressed and sold dressed, bought drawn and sold drawn, bought frozen and sold frozen, bought kosher-killed and sold kosher-killed, bought kosher-dressed and plucked and sold kosher-dressed and plucked, bought split or cut-up and sold split or cut-up (boxed and other pack)	21	21	20	20	1 pound
Poultry (including turkey) bought live and sold dressed weight basis. (Multiply live cost per pound by applicable figure in table. This establishes selling price per pound, dressed weight)	38	38	36	36	1 pound
Turkey bought live and sold live	21	21	20	20	1 pound
Turkey bought dressed and sold dressed, bought kosher-killed and sold kosher-killed, bought kosher-dressed and plucked and sold kosher-dressed and plucked, bought drawn and sold drawn, bought frozen and sold frozen, bought split and sold split, bought cut-up and sold cut-up (boxed and other pack)	17	17	17	15	1 pound
Simple average	32.0	31.8	30.2	29.6	

TABLE 35b

MARK-UPS OVER "NET COST" ALLOWED TO GROUPS 1, 2, 3, AND 4 RETAILERS FOR PERISHABLES COVERED BY THIS REGULATION, BY COMMODITIES

Food Commodities	Independent Retailers With Annual Volumes		Group 3 Retailer Other Than Independent With Annual Volume Under $250,000	Group 4. Any Retailer With Annual Volume of $250,000 or More	"Selling Unit" on Which Ceiling Price Must Be Calculated
	Group 1. Under $50,000	Group 2. $50,000 But Less Than $250,000			
	Cents	*Cents*	*Cents*	*Cents*	
(1) Dairy products:	...	...	...	...	
(2) Fresh fruits:					
Apricots	5	5	4½	4½	1 pound
Cherries, sweet	10	10	9	9	1 pound
Coconuts	2	2	1½	1½	1 pound
Cranberries	10½	10½	10	10	1 pound
Melons, except watermelons	2½	2½	2½	2½	1 pound
Peaches	4	4	3½	3½	1 pound
Pears	4½	4½	4	4	1 pound
Plums	5	5	4½	4½	1 pound
Prunes, Italian	3½	3½	3	3	1 pound
Watermelons	1½	1½	1	1	1 pound
(3) Fresh vegetables:					
Beans, green and wax	4½	4½	4	4	1 pound
Carrots, bunched	2½	2½	2½	2½	1 bunch
Carrots, other than bunched	2	2	2	2	1 pound
Cucumbers, except hothouse cucumbers	2½	2½	2½	2½	1 pound
Cucumbers, hothouse	7	7	6½	6½	1 pound
Eggplant	3½	3½	3	3	1 pound
Peas, green	5½	5½	5	5	1 pound
Peppers, sweet	5	5	4½	4½	1 pound
Spinach	3½	3½	3	3	1 pound
(4) Poultry:	...	...	...	...	
Simple average	4.5	4.5	4	4	

These tables show two things clearly. They show, first, that the mark-ups are large compared with the wholesale mark-ups shown in the preceding table. And second, they reflect the economies effected by the larger retail chain stores and supermarkets.

The dry groceries mark-ups for the largest stores range from 4 to 12 per cent lower than the corresponding mark-ups for the smallest stores. The unweighted averages for each kind of store (not given in the original OPA table) are shown at the foot of Table 34. Tables 35a and 35b show that the differences in the mark-ups for perishables among the different kinds of stores are smaller than for dry groceries.

These tables indicate that the chain stores, and in fact any large unit stores, operate on considerably lower margins than the smaller stores.

MASS RETAILING OF FOOD PRODUCTS[3]

The rise of these chain stores and large unit stores (supermarkets) is one of the most promising developments in retail distribution, to anyone interested in reducing marketing costs.

From a place of comparative insignificance before World War I, corporate grocery chains have grown to the point where they are retailing today approximately 40 per cent of all food products sold through retail outlets.[4] Several of these systems operate on a national basis, and one of them does an annual business of nearly a billion dollars. It is noteworthy that this development has come in a field of enterprise thought to be particularly unadaptable to corporate mass methods.

Large-scale retailing has taken several forms. Most important are, of course, the corporate grocery chains. Among independent retailers, however, a similar tendency is to be noted in the formation of voluntary chains for the cooperative purchase of supplies. Such chains employ much of the mass technique used by the corporate chains, but with important differences subsequently to be noted. Another recent form of mass retailing is the so-called "supermarket," which might be described simply as a gigantic retail unit in comparison with former standards.

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[3] This section is based on A. C. Hoffman, *Large-Scale Organization in the Food Industries*, Monograph No. 35, TNEC, Government Printing Office, Washington, 1940, pp. 5–14, and other sources as noted.

[4] Just before World War II, and again in 1944 during the war, chain stores of all kinds together handled 22 per cent of the total retail trade in the United States. (*Survey of Current Business*, USDC, February, 1945, pp. 17–18.)

THE CORPORATE CHAINS

In the course of its development, the corporate grocery chain has passed through three distinct periods. The first phase, covering the years prior to 1900, might be described as one of pioneering. In this early period a few small systems were experimenting with multiple-unit retailing and were perfecting the principles of management and operation which later were to serve as the basis of mass distribution.

First in the field was the Atlantic and Pacific Tea Company, which dates its origin from 1859. Beginning with a single store in that year, the founders of the system built it into a chain of 25 stores by 1865. Next to be started was the Jones Brother Tea Company (now the Grand Union Company) in 1872. Most of the other well-known grocery chains date their existence from the latter part of the nineteenth century, but in no instance were any of them sizable organizations according to present-day standards.

Even in these early days the grocery chains emphasized rapid turn-over, low overhead, and cash sales. For the most part, new stores were added out of the profits of the enterprise. The scale of their operations was not such as to permit the newly formed chains to integrate the function of wholesaling, nor to institute many of the methods of mass distribution which were to come later.

The second period, dating roughly from 1900 to the outbreak of World War I, was one of development. In these years the existing chain systems broadened their base of operations while new systems, attracted by the success of the older ones, were formed. Many of the smaller systems started in this pre-war period were subsequently absorbed by the larger systems in their program of expansion. Almost without exception these early twentieth century chain-store developments were slow and conservative, being financed for the most part out of profits accruing from the business.

The third stage began with the close of World War I. It was characterized not only by a rapid increase in both the number and size of chain systems, but also by vertical integration. All the large chains and many of the smaller ones now carried on their own wholesaling operations, and a few of them went actively into the field of processing food products for their stores. The Atlantic and Pacific Tea Company, for instance, established its own bakeries, built several milk plants, organized a subsidiary for procuring fresh fruits and vegetables, and arranged for the manufacture of food products under its own brand. Earnings were no longer sufficient to finance the new scale of operations and most of the larger companies secured additional capital by the sale of securities. In general, however, these securities were closely held and did not figure prominently in financial and stock-market transactions.

TABLE 36

Number of Retail Units Operated by the Five Leading Grocery Chains, 1920–36*

Year	Atlantic & Pacific Tea Co.	Kroger Grocery & Baking Co.	American Stores Co.	Safeway Stores Inc.	First National Stores, Inc.
1920	...	...	1,243	...	...
1921	5,217	...	1,274	...	...
1922	7,350	1,413	1,376	...	
1923	9,303	1,800	1,475	309	...
1924	11,421	2,127	1,630	439	...
1925	14,034	2,856	1,792	580	
1926	14,811	3,369	1,983	766	...
1927	15,671	3,749	2,133	915	1,681
1928	15,177	5,260	2,546	2,020	1,717
1929	15,418	5,575	2,644	2,066	2,002
1930	15,737	5,165	2,728	2,691	2,549
1931	15,670	4,884	2,806	3,527	2,548
1932	15,427	4,737	2,977	3,370	2,546
1933	...	4,400	2,882	3,291	2,705
1934	...	4,352	2,859	3,201	2,653
1935	...	4,286	2,826	3,405	2,623
1936	14,746	4,212	2,816	3,364	2,556
1937	...	...	2,620	3,327	2,473
1938	...	...	2,416	3,227	2,350
1939	...	...	2,272	2,967	2,244
1940	...	...	2,157	2,671	2,137
1941	About 6,400	3,727	2,130	2,660	1,923
1942	...	3,477	2,099	2,697	1,748
1943	...	3,174	2,066	2,493	1,585
1944	About 6,000	2,896	2,020	2,463	1,463

* Compiled from the company statements as reported in *Moody's Manual of Investments: Industrials.*

The five leading grocery chains at the present time are the Atlantic and Pacific Tea Company, Safeway Stores, Incorporated, The Kroger Grocery and Baking Company, First National Stores, Incorporated, and the American Stores Company. Table 36 shows the number of retail units operated by each of these companies for the period since 1920. The Atlantic and Pacific Tea Company is the largest of the chains. It used to have more than 15 thousand stores, located in all parts of the United States. Until the late 1930's this company operated more retail units than the other four leading systems combined. More recently it has reduced the number of its stores, but it has increased their average size.

Despite the rapid growth of these companies, they operate only a small percentage of the total number of retail grocery outlets. The United States Census of Distribution reported a total of 307,425 grocery and combination stores[5] in 1929, and 354,971 in 1935.[6] The

TABLE 37

SALES OF FIVE LEADING GROCERY CHAINS COMPARED WITH ESTIMATED TOTAL FOOD SALES OF ALL GROCERY AND COMBINATION STORES, 1919–1944

(millions of dollars)

Year	Estimated Total Food Sales, All Stores*	Reported Sales†				
		Atlantic & Pacific Tea Co.	Kroger Grocery & Baking Co.	American Stores Co.	Safeway Stores, Inc.	First National Stores, Inc.
1919	6,470	195	...	76	...	...
1920	7,132	235	51	103	...	10
1921	5,441	202	41	86	...	10
1922	5,735	247	54	86	12	10
1923	6,250	302	74	95	20	11
1924	6,250	352	90	98	28	12
1925	6,544	440	116	109	39	49
1926	6,985	574	146	117	50	59
1927	6,985	761	161	121	70	64
1928	7,353	973	207	137	103	76
1929	7,353	1,054	287	143	213	108
1930	6,544	1,066	267	143	219	108
1931	5,956	1,008	244	135	247	108
1932	5,294	864	213	115	229	101
1933	...	820	206	109	220	106
1934	...	842	221	114	243	111
1935	6,352	872	230	116	295	120
1936	...	907	242	113	346	121
1937	...	882	248	115	382	124
1938	...	879	231	110	368	124
1939	7,722	990	243	115	386	124
1940	...	1,116	258	125	399	131
1941	...	1,379	303	158	475	143
1942	...	1,471	389	209	611	174
1943	...	1,311	422	212	589	187
1944	...	...	448	228	657	165

* Total net sales of food in grocery and combination stores for the years 1929, 1935, and 1939 were compiled from the *U. S. Census of Distribution* for these years. For other years sales in such stores were estimated by means of an index number based on estimated consumers' expenditures for food. (Robert R. Doane, *The Measurement of American Wealth.* Table XXIII).

† *Moody's Manual of Investments: Industrials.* 1936 data for the Atlantic and Pacific Tea Co. and First National Stores, Inc., compiled from reports published in *Commercial and Financial Chronicle.*

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[5] Bureau of the Census, *Fifteenth Census of the United States, 1930,* Distribution, Vol. I, Retail Distribution, Part 1, Table 6.

[6] Bureau of the Census, *Census of Business, 1935,* Retail Distribution, Vol. IV, p. 13.

total number of stores operated by the five leading grocery chains in these years was about 28,250 and 28,100, respectively. The five big chains thus had about 9 per cent of all retail grocery units in 1929, as compared with less than 8 per cent in 1935. The proportion of the total grocery business which they did, however, has not declined since 1929 because they have followed a policy of increasing the volume of business per store rather than increasing the number of stores.

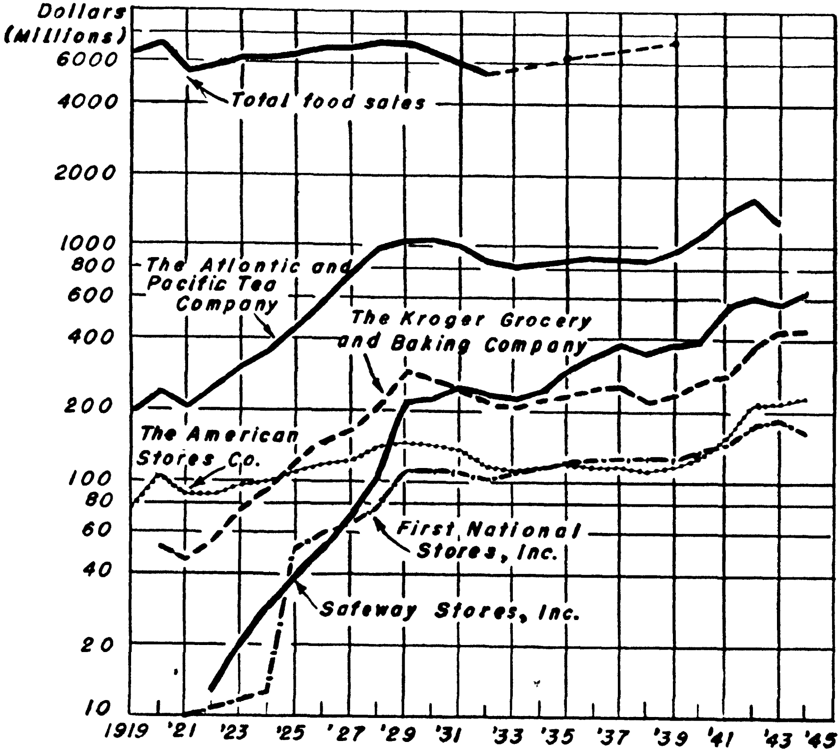

FIG. 63—Sales of five leading grocery chains compared with estimated total sales of all grocery stores.

The dollar sales of the same five systems since 1919 are shown in Tables 37 and Figure 63. These also show an estimate of the total sales of all grocery and combination stores, based on the United States Census of Distribution.

All five systems showed a tremendous growth in volume of business during the 1920's, most of them having increased it at least fivefold. Their combined sales, about 410 million dollars in 1922, grew to 1,805 million dollars in 1929. They increased their proportion of total grocery sales from 7 per cent in 1922 to 25 per cent in 1929. The Atlantic and Pacific Tea Company, largest of the systems, had about 14 per cent of the total grocery business in 1935, and about 13.5 per cent in 1941.

Since 1930 the sales of the big chains have moved up and down from year to year in accordance with changes in the supplies and retail prices of food products. The proportion of the total business done by them has remained about constant since the beginning of the depression.

In addition to the five largest chains mentioned above, there are numerous other sectional and local systems which taken together are a factor of considerable importance in the grocery trade. The *1929 Census of Distribution* showed that those chains, classified as national systems, had about 21 per cent of the total grocery business; the sectional chains, 8 per cent; and the local chains, 10 per cent.

On the whole the small grocery chain is less important today than it was 10 or 12 years ago. Much of the expansion of the big systems was accomplished through the acquisition of smaller chains with units in a particular city or territory which the former wished to enter. It seems likely that, barring higher chain-store taxes and other legal impediments to their development, the trend will be in the direction of fewer and larger chains rather than toward an increase in the number of small ones.

COOPERATIVE AND VOLUNTARY CHAINS OF INDEPENDENT RETAILERS

Another phase of large-scale retailing has been the organization of voluntary and cooperative chains of independent retailers. Such chains are of two types: (1) The wholesaler-sponsored chain in which the wholesaler takes the initiative in bringing about a closer merchandising affiliation with a group of independent retailers; and (2) the cooperative chain wherein the independent retailers own and operate a wholesaling enterprise on a cooperative basis. In both types the objective is fundamentally the same, namely, to integrate the wholesaling and retailing functions more closely and to provide the independent enterpriser in the grocery field with whatever advantages there may be in large-scale buying and wholesaling operations.

Voluntary and cooperative chains differ greatly in the character of their operations and the services which they render to their member stores. Some of them are closely-knit, coordinated organizations which provide the retailer with nearly all his grocery stocks and assist him actively in the management and operation of his store. In organizations of this sort the methods of wholesaling and retailing take on many of the characteristics of the corporate chains. At the other extreme are the loose associations which provide their members with little else than a common name and whose methods of operation are essentially the same as those of the completely unorganized independent.

The extent to which independent retailers have united themselves into some sort of voluntary or cooperative organization is indicated by Table 38. According to the figures compiled by the American Institute of Food Distribution, there were 508 wholesaler-sponsored groups and 164 retailer-owned chains in the United States in 1936. These organizations had a combined membership of more than 100,000 independent retail stores. The *1935 Census of Business* shows a total of around 304,000 independent grocery and combination stores for the country as a whole. Thus approximately one-third of this total number are affiliated with voluntary or cooperative groups.

TABLE 38

NUMBER OF VOLUNTARY AND COOPERATIVE CHAINS IN THE UNITED STATES, 1936*

Type of Organization	Number of Organizations or Groups	Number of Retail Members
1. Wholesaler-sponsored, or voluntary chains	508	77,889
2. Retailer-owned, or cooperative chains ...	164	23,604
Total, both types . .	672	101,493

* American Institute of Food Distribution, Inc., *Group Selling by 100,000 Retailers.* Compiled from Table 1, p. 52.

It would be incorrect to infer from these figures that mass retailing methods similar to those of the corporate chains are being applied by one-third of all independent retailers. It is probably correct to say that up to the present time most of these cooperative groups have done comparatively little to standardize retail store operations and to provide their members with those merchandising aids and services which are the basis of mass retailing.

So long as the ownership and management of the retail unit is vested in the hands of an independent operator, the complete integration of the functions of wholesaling and retailing and the standardization of retail practices characteristic of the corporate chains will be difficult to obtain. The voluntary chains have made great progress in this direction and the future holds the promise of much more. But the complete application of standardized large-scale methods—whatever their advantages and disadvantages—will probably never be made by the great majority of independent retailers regardless of their organizational and cooperative efforts.

THE SUPERMARKET

A very recent and highly significant development in the field of grocery retailing is the supermarket. It is difficult to lay down any exact definition of a supermarket or to classify any particular retail establishment as being in this category. As the term is currently used, it applies to a retail unit which aims toward a reduction of retailing costs by means of a large volume of business and a minimum of service to consumers. Most supermarkets are operated on a self-serve basis, offer no credit and delivery service, and are located in city districts where rents are comparatively low. Measured by the standards of the average grocery store, their volume of business is tremendous. Their sales commonly run up to three or four hundred thousand dollars per year. The appeal which such stores seek to make to the consumer is one of lower prices for those who demand a minimum of retail services.

The increase in the importance of the supermarket during the last few years has been no less than phenomenal. Within two or three years several thousands of them have been established in all parts of the country and it is estimated that in 1937 they were doing about 7 per cent of the total retail grocery business.[7] They have continued to grow since that time. The data for 1941-43, based on a sample of 460 stores in 22 states, are given in Table 39[8].

The first retail markets of this sort were established by newly formed companies operating only one, or perhaps a small chain of them. While none of the supermarket companies as yet has a business comparable with that of the leading grocery chains, they are expanding rapidly and have begun the process of vertical integration which characterized the growth of the older chains.

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[7] Hector Lazo, *The Future of Food Distribution,* Washington, 1937, p. 35. (pamphlet).

[8] M. M. Zimmerman, "Super Market Sales and Profit Trends: 1941–1943," *Journal of Marketing,* American Marketing Association, October, 1944, Vol. IX, No. 2, p. 162. Zimmerman forgets to point out that a large part of the increase in dollar sales reflects merely the wartime rise in prices.

The chains themselves have begun to emulate the supermarket by establishing similar retail stores of their own. This they have been led to do for two reasons: (1) To meet the competition of the supermarket companies, and (2) to reduce the burden of state chain store taxes based on a number of retail units. All of the big grocery chains are experimenting with big store units of this type and are installing them as rapidly as possible. The time is probably not far off when a large percentage—perhaps the major part—of their sales will be made in the supermarket type of store.

TABLE 39
SALES, PROFITS, AND PROFIT RATIOS FOR 460 SUPERMARKET UNITS, 1941–43

Year	Sales	Net Profit*	Ratio of Profit to Sales
	(dollars)	*(dollars)*	*(per cent)*
1941...........	169,359,093	3,007,175	1.77
1942......	217,623,063	3,267,142	1.50
1943.........	234,144,773	3,437,047	1.46

* After taxes.

There are two phases to mass retailing. One is integration of wholesaling and other distributing functions with that of retailing, which is discussed in the next section. The second is the operation of the retail store itself. The tendency of the corporate chains, and more recently of the supermarket companies, has been rapidly and unmistakably in the direction of larger retail units, perhaps of a size and type that today scarcely can be envisaged.

The contrast between the mass distributor and the traditional independent grocer so far as the size of the store unit is concerned is illustrated by the following comparison: To do 1 per cent of the total retail grocery business of the United States it takes on the average 429 stores of the supermarket type, 1,170 corporate chain-store units, 4,000 voluntary chain units, and more than 10,000 unaffiliated independent stores. In other words, the average supermarket has a volume of business nearly 25 times as large as that of the average independent store, while the average corporate chain unit is 9 times as large as the average independent store. The significance of this from the standpoint of retail methods and efficiency will be discussed later.

VERTICAL INTEGRATION BY THE GROCERY CHAINS

The grocery chains are commonly thought of only in connection with the retailing of food products. Their enterprises, however, reach back into all phases of food processing and distribution, and in many cases they bridge the entire span between producer and consumer. More than any other type of large-scale food concern, they furnish examples of vertically integrated and diversified enterprises.

Some idea of the diversity of operations carried on by the big grocery chains may be obtained from Table 40. This table shows the plant facilities owned and operated by the five leading firms.

The first thing to be noted is that all these systems operate their own warehouses for servicing their retail units with stocks of goods. The Atlantic and Pacific Tea Company has nearly a hundred warehouses and processing plants in the larger cities of the country. The function performed by these warehouses is essentially the same as that which the specialized wholesaler performs for the independent retailer. Consequently the corporate chains purchase almost nothing from, and virtually have no dealings with, the specialized grocery wholesaler.

The baking of bread by the larger chains already has been mentioned. The Atlantic and Pacific Tea Company operates 35 bakeries; the Safeway Company, 20; and the Kroger Company, 15.

Three of the chains (Kroger, Safeway, and First National) have gone into the meat-packing business and operate packing plants. In the case of the latter company no slaughtering of live animals is carried on, the operations being confined to the curing and processing of meats. The Atlantic and Pacific Tea Company operates 12 meat warehouses for supplying its retail units with meat products, but it engages in no meat-packing operations.

The entrance of the grocery chains into the field of dairy manufacturing and distribution is especially noteworthy. All of the four largest grocery chains operate condensery plants in producing areas in which milk is canned for sale under their own brands. The Whitehouse Milk Company, subsidiary of the Atlantic and Pacific Tea Co., is the third largest firm in the canned milk industry. Several of the chains also operate butter and cheese warehouses in or near the areas of heavy milk production, where these products are as-

TABLE 40

Plant Facilities Owned and Operated by the Five Leading Grocery Chain Systems in the United States, 1936 and 1944*

Type of Facility	Atlantic & Pacific Tea Co.		Kroger Grocery & Baking Co.		Safeway Stores, Inc.		American Stores, Co.		First National Stores, Inc.	
	1936	1944	1936	1944	1936	1944	1936	1944	1936	1944
Retail stores	15,427	6,000	4,250	2,896	3,277	2,463	2,822	2,020	2,653	1,463
Warehouses, total	111	37	†	25	79	41	10	9	†	4
General	52									
Produce‡	39									
Meat	12			4		7				
Fish	5									
Butter	3									
Bakeries	40	35	13	15	21	20	9	7	†	
Meat packing plants			2	2		7			†	1
Milk plants§	13	6	5	5	4	8	1	1		2
Coffee roasting plants	8	9	4	2		7				
Canning plants	6‖	4				1	1	1		
General factories	9	6	1	1	1				1	1
Printing plants	1	1	1	1				1	1	

* Compiled from annual reports of the companies as given in *Moody's Manual of Investments: Industries.*

† Indicates facilities are operated, but number unknown.

‡ For serving retail units with a general line of groceries.

§ Includes condenseries, creameries, cheese, and miscellaneous dairy plants.

‖ Salmon canning. Also operates fishing fleet.

sembled from local manufacturing plants for shipment direct to the branch warehouses of the chain.

Other processing operations carried on by the chains include coffee roasting, salmon canning, and the making of a great number of special products such as mayonnaise, spices, jellies, and beverages.

The chains also have gone a long way toward the displacement of the various middlemen engaged in the handling of fresh fruits and vegetables. The larger systems have set up their own subsidiaries for handling these commodities, and wherever possible buy direct from growers and shippers rather than from the regular terminal wholesale markets.

The position of the grocery chains in the distribution of fresh fruits and vegetables in New York City is shown in Figure 64. The chains handled a total of 73,000 cars of produce in this city in 1936, but they purchased only 36,000 cars of this total from the wholesale markets within the city. The remainder they received direct at their warehouse doors, either from growers or local shippers. The situation in New York City is typical of that to be found in other large urban centers. The proportion of direct receipts of fruits and vegetables by the chains in Boston is about 55 per cent; and in Philadelphia 57 per cent.[9] As a rule the larger chains use the terminal

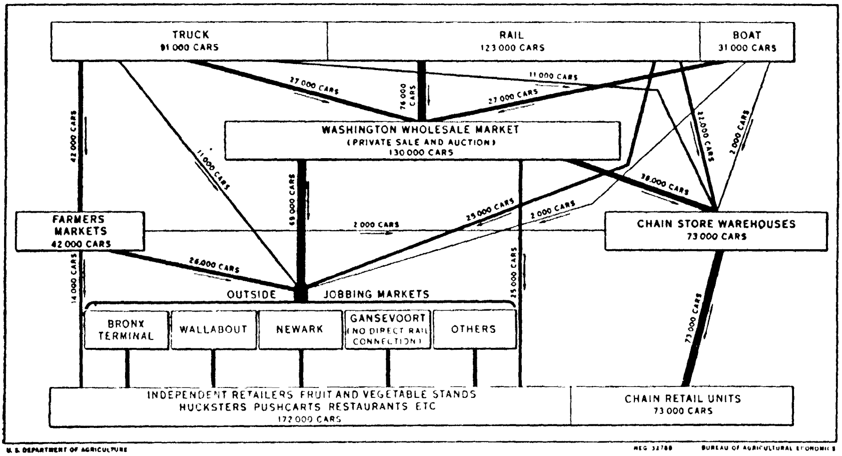

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FIG. 64—Flow of fruits and vegetables, New York metropolitan area markets, 1936.

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[9] A. C. Hoffman and L. A. Bevan, *Chain Store Distribution of Fruits and Vegetables in the Northeastern States*, BAE, USDA, 1937, pp. 16–18, (mimeo.)

markets as a source of supplies less than do the smaller systems. The Atlantic and Pacific Tea Company buys almost nothing from the terminal produce wholesale markets in many cities.

It may be set down as a general rule that the bigger the chain the more distributive functions it tends to integrate. Table 39 showed that the Atlantic and Pacific Tea Company carries on a wider variety of enterprises than the other big chains, and these in turn are far more diversified than the local chain systems.

This is not due to policy whims on the part of the management of the big grocery chains. The big chains have been led naturally, and for reasons associated with more efficient operation, into many enterprises other than retailing.

The desire to undertake certain processing and distributive functions in addition to retailing has been one of the main reasons why the larger chain systems have added to the number of their retail units. Obviously it will not pay a small chain of four or five hundred stores to operate a coffee-roasting plant. No system having less than one thousand units would be in position to use the output of a modern plant for canning milk. The point to be emphasized here is that the bigger chains actually have done so, and that their desire to synchronize their retailing and manufacturing operations has been one of the main reasons that they have added to the number of their retail stores.

THE INTEGRATION OF GROCERY WHOLESALING AND RETAILING

Another important aspect of mass distribution from the standpoint of marketing efficiency is the fact that mass distributors have tended to integrate successive marketing functions within a single organization. The number of bargaining transactions and ownership transfers necessary to move goods from producer to consumer thus is greatly reduced as compared with the regular channels.

The importance of this is commonly overlooked. No inconsiderable part of the total cost of distributing food products is incurred for the purpose of bringing about ownership transfers at various stages in the marketing process. Brokers' fees, wholesalers' commissions, salesmen's salaries, advertising expenditures—all are partially chargeable to the efforts of sellers and manufacturers to find retail outlets for their goods. Obviously the greater the number of such buyers and sellers and the more functionally specialized they are, the greater the number of ownership transfers necessary to move the commodity forward toward the consumer.

The purpose served by these ownership transfers is that of apportioning the supply properly with respect to the ultimate demand. Clearly this is a function which must be performed by any type of distributive system, even a completely unified, noncompetitive one. The mechanics by which it is done, however, will be greatly different, depending on the number, size, and character of the marketing agencies. In the regular channels, comprised as they are of many small, specialized handlers, the product moves forward chiefly by means of numerous buying and selling transactions. In contrast, the mass distributor moves it forward on an intracompany basis, with the orders and requirements of the regular system.

This is the key to much, if not most, of the advantage which the grocery chains have over the independent retailer-wholesaler system. When the function of wholesaling is integrated with that of retailing, it is no longer necessary to "sell" the retail store. The average independent retailer is visited daily by at least a half-dozen salesmen, each trying to sell him a small bill of merchandise which he may or may not need. Those who seek the retailer's business cannot permit him simply to order his merchandise as he needs it; the competition between them is such that they constantly must persuade, cajole, and coax him.

The cost of this sort of thing in time and money is nothing short of stupendous. Yet it is seldom mentioned when methods of reducing the costs of food distribution are being considered because most people, including a fair share of the economists, are more concerned with the preservation of competition under old institutional forms than with economic efficiency as the term has been defined above.

How much mass retailing has contributed toward reduced marketing costs it is of course impossible to say. Data compiled by the Federal Trade Commission in connection with its chain-store inquiry indicated that, in the four cities studied, the chains were selling at prices approximately 7 per cent below those of their independent competitors. Numerous studies made by other agencies confirm this general relationship between the prices of chains and those of independents, although there are of course many individual exceptions to these averages. It is probable that the reduction in food costs brought about as a result of mass retailing is even greater than these price differentials would indicate, since all retailers must follow the lead of their low-price competitors to some extent if they are to stay in business in competition with them.

MONOPOLY[10]

Interwoven with the rise of mass distribution is the problem of monopoly and imperfect competition. The astonishing growth of the chains has led many to wonder whether we now have, or are ever likely to have, anything approaching monopoly in this field. In the controversy surrounding this question there seems to be some confusion of thought as to just what the essence of monopoly is, and how to recognize it when we see it.

The nearest thing to a retail monopoly we ever had in this country was the village grocery store. It is not always recognized as such because we commonly think of monopoly only in connection with big business. But the village store nevertheless had monopoly elements, and for the simple reason that the shopping choices of its customers were limited by the cruising radius of a horse and buggy or by the legs of little boys whose job it was to fetch the groceries. If we think of retail competition in terms of the number of stores available to the average consumer, then we have far more of competition today than we have ever had in the past simply because of the automobile.

The growth of the chain store of course involves more than the problem of local neighborhood competition. What the public wants to know is whether it has led to narrower and more flexible marketing margins or to wider and more rigid ones.

The two criteria most commonly used by the Federal Trade Commission and other regulatory bodies to detect the existence of imperfect competition are: (1) concentration of control, and (2) a higher-than-average rate of profit. But neither of these things is important in itself. The real problem of monopoly is whether or not it results in higher prices or wider margins than would exist under competition. The answer to this problem is not found in statistics showing that a few sellers control a large part of the supply, that they divide the market, or even that their profits are high.

Obvious difficulties confront public regulatory agencies and research workers when they are asked to determine whether a given line of industry is reasonably competitive or not. The economic theorist will admit that casting the problem in terms of marginal revenue and marginal cost isn't going to help much in establishing a provable case unless we can determine with reasonable precision what these are, and the prospects that we shall ever be able to do this are not good. The empirical approach to the matter ought to be broader and more analytical than has sometimes been the case. Specifically, more attention should be paid to the difference in average costs under competition or monopoly. Certainly we are not justified in assuming that these are the same, as we tacitly do in most of our classroom diagrams of monopoly principles.

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[10] A. C. Hoffman, "Changing Organization of Agricultural Markets," *Journal of Farm Economics*, Vol. XXII, February, 1940, No. 1, pp. 165–67, and A. C. Hoffman and F. V. Waugh, "Reducing the Costs of Food Distribution," *Yearbook of Agriculture, 1940*, USDA, pp. 635–36.

The limitations of the usual approach to monopoly in terms of concentration of control and profits may be illustrated by trying to apply it to the grocery chains. The rates of return on invested capital which they have made are among the highest to be found anywhere in the economy. As a matter of fact, some of the systems were built almost entirely out of profits and without the use of any capital from outside investors. This would appear to constitute prima facie evidence of monopoly, were it not for the fact that their rate of profit tended to decline steadily as their percentage of the total grocery business increased. Obviously these two criteria of monopoly power are not only inconsistent in this case, but they tell us nothing with respect to the effect of the chains on prices and margins.

The chief explanation of the big profits made by the chains in the early stages of their development was that the independent retailer could not offer them the kind of competition needed to pass on the consumers all the gains of mass distribution. One might say that the early chains did have a monopoly, but it was a monopoly of a new technique of marketing rather than of the food supply. Not until they began to compete with each other on the basis of equal efficiency and bargaining power were their profits reduced to more normal levels.

This leads to the further observation that the public may not be fully protected against monopoly in retailing by the fact that the percentage of business done by the independents is maintained. The important thing to watch is the competition among the chains themselves. In this connection the organization of independent merchants into voluntary and cooperative groups has done much to increase the effectiveness of their competition.

It was stated that the real problem of monopoly lay in a raising of prices or a widening of margins above that which would be obtained under competition. Obviously, however, this isn't what we are worrying about in the case of mass retailers, because the charges against them are not that their selling prices are too high but that they are too low. Public policy toward the mass distributor, as expressed through chain store taxes and resale price maintenance laws, is directed toward maintaining rather than reducing retail margins. Its objective is not to protect consumers against an immediate exercise of monopoly power, but to preserve economic individualism in the marketing field. This may be a good public policy, all factors considered. But so long as we follow it, we can't logically accuse the mass retailer of having contributed to wider marketing margins.

OVER-ALL REORGANIZATION OF THE MARKETING SYSTEM

Thus far only those savings which can be made within the framework of the present marketing system have been discussed. To a considerable extent, this leaves untouched one of the main causes or high marketing costs—the duplication of processing, transportation, and marketing facilities arising out of competition itself. Great progress has been made in improving the efficiency and reducing the costs of individual firms; but this has not resulted in a proportionate improvement in what might be called the over-all efficiency of marketing, because the nature of our marketing system is such that no limitation has been placed on the number of firms or the quantity of labor and capital used in food distribution.

It is not possible on the basis of present information even to approximate how much the needless duplication of marketing facilities at all stages of food distribution adds to marketing spreads. But it can be asserted positively that the number of retailing, wholesaling, processing, and assembling establishments has multiplied out of all proportion to what would be needed if food distribution were organized on what might be called a social-engineering basis.

The number of grocery stores, for example, has increased from about 160,000 in 1900 to 355,000 in 1935. Population per store has decreased in this same period from 486 to 358. Part of this increase in retail facilities is due to the fact that a larger proportion of the population now lives in cities and requires more in the way of retail facilities. But it also signifies a growing excess of retail facilities, the cost of which must be reflected either in wider marketing spreads than otherwise would be necessary, or in a lowered rate of recompense to the labor and capital employed in retailing enterprises.

Nor is this situation confined to food retailing. To some extent at least it is to be found at every point in the marketing system. We do not need all our creameries and canneries and grain elevators to handle our present food supply. Studies have repeatedly shown that many of these plants are operating at far less than capacity and that substantial cost savings could be made if all of the supply were to move through the most efficient types of plants operating at full capacity. In general this probably would mean a substantial increase in the average size of plant and handling agencies, and it certainly would mean a reduction in numbers of handlers so as to bring the over-all capacity of the marketing system more in line with the facilities actually needed to process and distribute food products.

Generally speaking, proposals of this kind have not yet received much discussion so far as the food industries are concerned. During recent years, however, an increasing number of people are beginning to think of fluid-milk distribution in these terms. Careful students of the problem know that the costs of fluid-milk distribution are high mainly because of the duplication of pasteurizing facilities and the overlapping of milk routes, and that these costs can be reduced significantly only by a fundamental reorganization of the fluid-milk marketing system. How much these costs can be reduced and whether or not the necessary measures are feasible, considering all the factors involved, is of course conjectural. A recent study of fluid-milk marketing in Milwaukee, Wisconsin, indicates that savings of more than 2 cents per quart might be achieved through a unified, noncompetitive system of milk distribution. A gain even approximating this estimate would far exceed any saving likely to be obtained in ony other way.

To achieve the maximum efficiency in food distribution by limiting the number and kind of marketing facilities to those actually needed to provide consumers with the goods and services they desire would obviously involve some fundamental changes in our present conception of free enterprise and competition. It probably would mean that some limits would have to be placed on the right of private enterprisers to erect plants and engage in marketing operations unless there was a real need for the added facilities. In some cases it might even mean the abandonment of competition as the regulator of economic forces and the substitution of public control somewhat along the lines of that now being exercised in those industries classified as public utilities. At the present time most of the food industries are too ramified and their economic units are too numerous and too separate to permit an easy transition to such a system. The thing to be emphasized, however, is that this is the general direction in which food distribution probably will have to go if the sole objective is to process and distribute food products at the least possible cost in terms of man-hours and capital equipment.

The dangers and opportunities in this situation may be sized up in these words:

"There are dangers in any program aimed at getting efficient marketing through government-industry cooperation. Maximum economies might mean the development of gigantic corporations, and the decline of small businesses; it might mean a great deal of government regulation; it might restrict entry of new firms in the marketing system; it might stifle progress through the establishment of fixed charges, rates and methods.

"I fully grant these dangers. They are real. But is there no middle ground? Must we accept either the alternative of inefficiences as the price of unrestricted competition, or the alternative of monopoly and excessive government regulation as the price of cooperation?

"If so, I for one, would vote for competition. But I believe there is a middle ground. I believe we are intelligent enough to find some way of cooperating with industry groups without destroying desirable forms of competition and without sacrificing the interests of farmers, dealers, or consumers. If this can be done we shall have gone a long way toward making possible full production in agriculture, full consumption in cities, and fair incomes to farmers."[11]

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[11] Frederick V. Waugh, *Needed Government Programs in Marketing,* Address at the 23rd Annual Agricultural Outlook Conference, December 4, 1945, BAE, USDA (mimeo.)

APPENDIX A

The Perfect Market in Time, Place, and Form

The general principles of any science are based upon a few fundamental concepts. Real life is too complex to be comprehended by one or two concepts or laws; it must be comprehended bit by bit, by the "one thing at a time" method, "other things being equal" or constant. Accordingly, the scientist searches for a few major uniformities that underlie the complex phenomena of real life, and finding these uniformities necessarily calls for some abstraction. None of these abstract concepts is found in actual life as such, but that is merely because each is overlaid by other phenomena of a less general kind.

The general principles of physics are based upon such abstract concepts as frictionless motion, absolute zero, a perfect vacuum, and so on; those of chemistry, upon pure elements, in terms of atoms, electrons, protons, etc. The general principles of marketing are based similarly upon a few fundamental concepts. One of the most basic of these is the concept of a market.

Markets are variously conceived. Webster's unabridged dictionary gives eight different meanings of the word. The first six of these definitions are given below:

"1. A meeting together of people, at a stated time and place, for the purpose of traffic (as in cattle, provisions, wares, etc.) by private purchase and sale, and, usually, not by auction; also, the people assembled at such a meeting; as a *market* is held in the town every week.

"2. A public place (as in a town), or a large building, where a market is held; a market place; especially, a place where provisions are sold; as, a city *market*, fish *market*.

"3. Buying and selling, or either of the two, as an act or occupation; marketing; a sale or purchase; a bargain.

"4. The region in which any commodity can be sold; the geographical or economic extent of commercial demand.

"5. Opportunity for selling or buying of commodities; or the rate of price offered for them; also the phase or course of commercial activity by which the exchange of commodities is effected; as, the *market* is dull, active.

"6. A body or group of men associated in, or organized for, the buying and selling of goods. *Market* may be used with reference to goods in general, or of a particular class of goods, expressed or implied, or of those dealing in them; as, the stock *market;* the beef *market.*"

Economists themselves use the word with several different and generally vague meanings. In economic literature, one finds the following sample definitions:

"A market in economic parlance is the area within which the forces of demand and supply converge to establish a single price."[1] Another authority considers several definitions, and finally chooses this: "A market is the sphere within which price-determining forces operate."[2]—although he apologizes for the vagueness of the word "sphere." Another economist has a different idea; he says: "The term 'market' is used here in the sense of funds available for spending rather than in the geographical sense of a market place. It refers to the financial aspect of the market."[3] Another economist attempts no definition at all, but merely classifies markets descriptively as local, central, secondary, jobbing, and retail.[4] Still another economist uses the term to refer both to a market center and a market sphere; he emphasizes the importance of the sphere.[5]

Under one definition, Chicago, Kansas City, and Liverpool are three wheat markets. Under another definition, they are one market. Under the third, the whole wheat farming and consuming territory constitutes the market. When the same word is used freely and interchangeably in several different senses, it is small wonder that confusion follows.

It will simplify matters a good deal if we recognize that a market is not a place, nor center, nor area, nor sphere. A market is a group of men (or women), a group of buyers and sellers with facilities for trading with each other. They may be gathered together at one point, or in one market place, or scattered over a large area—that is only incidental. The important thing which defines a market is the closeness of the communication between the men in it.

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[1] *Encyclopaedia of the Social Sciences,* Vol. 10, 1933, p. 133.

[2] B. H. Hibbard, *Marketing Agricultural Products,* D. Appleton & Co., 1921, pp. 13–15.

[3] F. A. Harper, "Growth of the Market Among Non-Agricultural People in the United States," *Farm Economics,* Cornell Univ., November, 1939, p. 2,839.

[4] Clark and Weld, *Marketing Agricultural Products,* The MacMillan Co., 1932, pp. 49–50.

[5] E. G. Nourse, "Normal Price as a Market Concept," *Quarterly Journal of Economics,* Vol. 33, August, 1919, p. 639.

This was clearly stated, although not emphasized, by Marshall:

"When demand and supply are spoken of in relation to one another it is of course necessary that the markets to which they refer should be the same. As Cournot says, 'Economists understand by the term Market, not any particular market place in which things are bought and sold, but the whole of any region in which buyers and sellers are in such free intercourse with one another that the prices of the same goods tend to equality easily and quickly.'* Or again as Jevons says:—'Originally a market was a public place in a town where provisions and other objects were exposed for sale; but the word has been generalized, so as to mean any body of persons who are in intimate business relations and carry on extensive transactions in any commodity. A great city may contain as many markets as there are important branches of trade, and these markets may or may not be localized. The central point of a market is the public exchange, mart or auction rooms, where the traders agree to meet and transact business. In London, the Stock Market, the Corn Market, the Coal Market, the Sugar Market, and many others are distinctly localized; in Manchester, the Cotton Market, the Cotton Waste Market, and others. But this distinction of locality is not necessary. The traders may be spread over a whole town, or region of country, and yet make a market, if they are, by means of fairs, meetings, published price lists, the post office or otherwise, in close communication with each other.'†"[6]

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* *Recherches sur le Principes Mathématiques de la Théorie des Richesses,* Chapt. IV.

† *Theory of Political Economy,* Chap. IV.

In modern times, with the improvements that have taken place in communication facilities, the market center is giving place to the broad decentralized market. The prices of innumerable local buyers and sellers are now kept in line, not by reference to a central market. but by more nearly direct reference to each other, through a large number of small markets over the producing and consuming area. The men in these small markets, distant as they are from each other physically, are yet in such close communication with each other that they constitute a market, the same as if they were gathered together in one place.

A PERFECT MARKET

The definition of a market given above is analagous to a physicist's definition of a vacuum. And just as the physicist defines the

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[6] Alfred Marshall, *Principles of Economics,* Eighth Edition, Macmillan, London, 1925, pp. 324–25.

abstract concept of a vacuum as a perfect *vacuum*, or of no heat as absolute zero, the economist may adopt, as the abstract concept of a market, the perfect market.

The distinguishing feature of a perfect market is that all the buyers and sellers in it have perfect knowledge of demand, supply, and prices, and act rationally upon that knowledge. In the simplest case, all the buyers and sellers of a particular commodity are located at a single point in space, and are doing business at a single instant of time. In such a market, a uniform price prevails.[7]

In the definition just given, three elements are involved: (1) a particular commodity, (2) a point in space, and (3) an instant of time. These three factors require some elucidation.

SPACE

The buyers and sellers who constitute the market for a particular commodity are usually scattered over a considerable territory. This does not preclude the application of the concept of a perfect market; the concept is merely broadened. The uniform price which distinguishes a perfect market is uniform over the area, plus or minus any necessary transportation and handling charges between buyers and sellers in different parts of the territory.

The idea of a "price surface" is helpful here. Where the market covers a considerable territory, the price surface is seldom flat like the surface of an ocean. The surface is highest at the points where the local demand is greatest relative to the local supply. But so long as the high point does not get higher than a transportation and handling charge above prices in the nearest surplus territory, the market is still perfect. The price surface for wheat in the United States, based on average prices for the ten years from 1925 to 1934, is shown in Figure 65. The low point in this price surface lies in western Wyoming. There are two or three high peaks—one in southeastern New York, one in Arizona and southern Nevada, and another in Georgia.[8] The difference from the low to the high points

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[7] "Thus the more nearly perfect a market is, the stronger is the tendency for the same price to be paid for the same things at the same time in all parts of the market; but of course if the market is large, allowance must be made for the expense of delivering the goods to different purchasers; each of whom must be supposed to pay in addition to the market price a special charge on account of delivery." Marshall, *op. cit.* p. 325.

[8] The significance of prices in the extreme price peak areas is somewhat uncertain, since so little wheat is sold by farmers in those areas that the prices quoted may not mean much. In states adjacent to two of the price peaks, no prices are quoted at all.

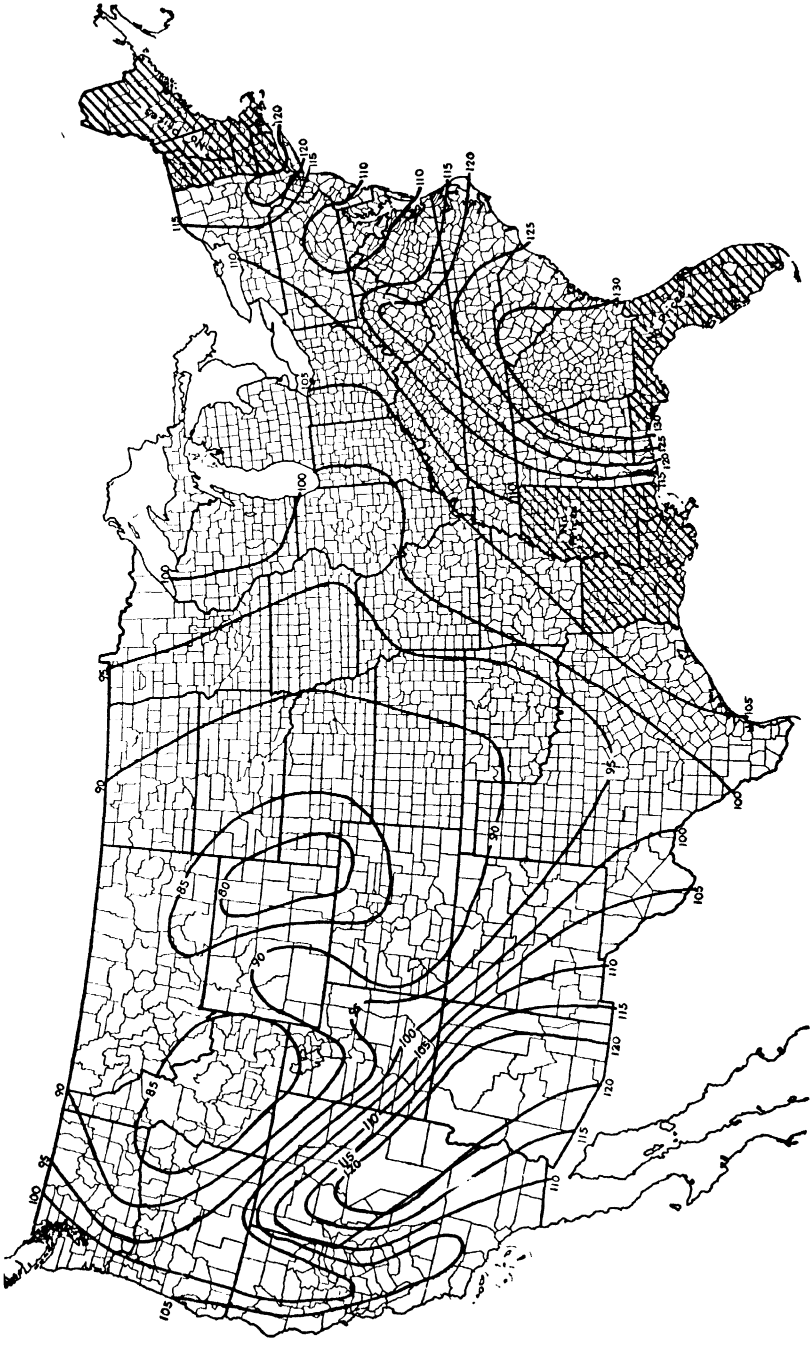

FIG. 65—Average prices received by farmers for wheat, 1925–34 (Courtesy USDA).

corresponds roughly with the costs of transportation and handling.

The expansion of the concept of a market to cover a geographical area does not introduce any complications into the theory of price determination, other than the transportation-cost differentials mentioned in the preceding paragraph. The group of buyers and sellers may be concentrated at one point, or at several points, or it may be widely scattered. Prices are determined by the whole group in either case. For example, all the trading in butter might take place in one room in New York, with prices posted currently on a blackboard where all the buyers and sellers could see them. This would approach a perfect market (that is, it would reflect supply and demand conditions accurately), since all buying and selling prices would be known to all the buyers and sellers, and the prices that would just move the existing supply into consumption would be continuously and accurately determined.

If because of overcrowding, another office were opened up across the street or for that matter several hundred miles away in Chicago, with prices and orders handled telegraphically, there would be no change in the situation, economically speaking. There is no reason why prices (adjusted for transportation charges) would be different afterwards from what they were before. If each buyer and seller knew accurately what the buying and selling prices of the others were, they would act the same as if they were all together in one room. The thought may be carried further. If many offices were opened up in a large number of small towns, with only one or two buyers and sellers in each town, but all well provided with current price information, the situation would still be unchanged. Prices still would be determined in the same manner, and would be the same as before.

PRICE MAKING IN DECENTRALIZED MARKETS

The point may be generalized as follows: When a group of buyers and sellers are all together, trading in one room, with prices and other information posted where everybody can see them, the requirements of the perfect market are approximated. If the group is widely scattered, but the market knowledge possessed by traders is unimpaired, the market is equally good. Each buyer or seller has an effect on the market price proportional to the volume of his purchases or sales, but no more; Smith's 1,000 bushels added to the supply cut the demand curve at a lower point to the same extent as the sum of ten other farmers' 100 bushels each; no one buyer or knot of sellers or buyers can "set the price" in the one case more than in the other. Fundamentally, competition is just as good in the scattered market as in the concentrated market. For competition does not depend upon having all buyers in one room, or in one stockyard, so that they can rub elbows. It depends upon buyers and sellers being in touch with each other's prices, not with each other's persons. If buyers and sellers do not know each other's prices, it does not matter how close to each other they are physically; and if they do know each other's prices, by radio or telegraph or any other means, it does not matter how far apart they are physically.

The abstract concept of the perfect market is useful in that it provides a standard, a sort of sea-level point from which to measure aberrations in prices over the area where buyers and sellers are scattered. If prices at one point are more than a transportation and handling charge above prices at another point, then the prices at the one point are too high, or at the other, are too low. Which point is out of line, and how much, can be determined by comparison with still other points in the area.

For example, the grain market often is spoken of as practically perfect, in that grain prices at different points in the market (that is, at different terminal market points in the country), it is claimed, never get out of line with each other (more than a transportation and handling charge apart). It is relatively easy to maintain this sort of perfection in the case of a durable commodity like grain, where transportation costs are low and grades are uniform. Even if short-time spatial surpluses and deficits do occur, they can be reduced by storage at the surplus points, and by "unstorage" at the deficit points.

But even the grain market, perfect as it usually is in space as far as *terminal* market prices are concerned, falls some distance short of perfection when local market prices are considered. Unpublished studies made before the advent of the truck have shown that the price surface of the local grain market over the state of Iowa was in many cases a good deal more uneven than handling and transportation charges would account for. The difficulty in this case was the lack of price information in the local markets, and the uncertainties involved in the grade of the product. The coming of the truck has reduced these difficulties and smoothed out the price surface to some extent by reducing costs, and more local price information is available now, but much still remains to be done. An adequate local market news system still remains to be developed.

TIME

The buyers and sellers in a market usually do business, not at one point of time, but in the form of a series of transactions over a period of time. The concept of the uniform price may be broadened not only geographically, to cover an area, but also chronologically, to cover a period of time. The price is uniform over a period of time, plus or minus the storage charges involved in carrying some of the commodity over from periods of relative abundance to periods of relative scarcity.

That is to say, the standard of the perfect market used in appraising market prices over an area of geographical *space* can be applied also to appraising market prices over a period of *time*. This element of time is most important in the case of durable goods. If manipulation, squeezes, false rumors, etc., drive prices at any one point of time out of line with prices at another point of time (that is, more than a carrying charge above or below them) the extent of the aberration can be measured, and we can say that prices were too high or too low at this or that point of time.

This broadening of the concept of a perfect market to cover a period of time is not explicitly set forth in the literature, like the geographical broadening of the concept by Cournot, Jevons, and Marshall. But it is clear that a market should be perfect in time as well as in space. It is as faulty to have corn prices at Chicago 3 cents lower today than yesterday (if no change has taken place in fundamental demand and supply conditions) as it is to have Des Moines prices 3 cents lower than a shipping charge to Chicago today.

The test of the uniformity of prices over a period of time (plus or minus carrying charges) can be applied separately to the central market, the local market, or the whole market of primary producers and consumers, conceivably with different results in each case. At the central market for beef cattle, for example, receipts may be heavy for a few days, and prices may fall. A few days later, receipts may fall off and prices rise, perhaps 50 cents per 100 pounds. We will assume that the demand remained constant throughout. If the time elapsing between the low and high price points were five days, and it cost 10 cents per 100 pounds per day to carry cattle at the central market, then that market would have done as perfect a job of equilibrating prices over time as physical conditions permit. It would have reduced price fluctuations to a carrying charge from the low price point to the high.

But by the same test the producer and consumer market as a whole would be adjudged defective. A farmer ordinarily feeds his beef cattle to the point of maximum net returns. If he sends his cattle to market before that point, he will net slightly less; if he holds them past that point, he will also lose. But the point is more like a rounded hilltop than a sharp mountain peak. The effect on the farmer's net returns of selling his cattle a few days earlier or later is negligible; his carrying charge for a few days is practically zero. Accordingly, if an adequate market-reporting system had been available to farmers, the heavy runs of cattle would not have taken place, and prices would not have had to fall at the terminal market. The marketing system did not provide the primary producers with enough market information.

The problem of market perfection over a period of time is also complicated by the fact that even after a market has done a perfect job of discounting the (predictable) future, unpredictable events may change the picture later on.

FORM

Modern economic theory has drawn our attention to the difficulty of defining "a commodity" or "a product."[9] Strictly speaking, every lot of "a commodity" being exchanged in a market is different from every other lot, just as every leaf on a tree is different from every other leaf. Each lot is a separate commodity, and the uniform price for "a commodity" that distinguishes a perfect market ceases to have meaning; there is only one lot of each commodity. But under actual conditions, goods, like leaves, have certain similarities which permit them to be divided into broad categories—hogs, wheat, corn, etc., each of which may be spoken of as "a commodity."

This primitive degree of market classification served for centuries in history, where cattle, for example, were not only considered as "a commodity" but even used as money (the word "pecuniary" is derived from the Latin word *pecus* for cattle). But as markets become more and more important in economic life, greater accuracy in definitions of commodities became desirable. Some cattle were worth more in exchange than other cattle. In order to give some recognition to these differences within a commodity, each commodity became subdivided into market classes. Hogs, for instance, were divided into butcher hogs, packing sows, stags, etc.; wheat into winter, spring, hard, and soft, and corn into flint corn, dent corn, and so on. This still left a good deal of diversity even within classes. It meant that market quotations still had to be expressed in price ranges, not in single prices. A further subdivision then followed. The market class, butcher hogs, for example, was subdivided by weight, and finally by grade.

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[9] Edward Chamberlin, *The Theory of Monopolistic Competition,* Harvard University Press, 1933, Chap. IV.

This process of classification and subclassification permits a wider and more accurate application of the concept of market perfection. The price for 92 score butter, for example, at one point in space or time can be closely compared with the price for 92 score butter at another point, because there is very little difference between the values of different lots of 92 score butter. The pricing process also becomes more objective, because the classification of goods into classes and grades reduces the "higgling and bargaining" in the market place concerning what the particular lot of goods is worth.

GRADE PRICE DIFFERENTIALS

We saw earlier that a perfect market would result in a price that would be uniform (plus or minus storage costs) at any one market over a period of time when fundamental demand and supply remained unchanged. We now extend the concept further to recognize that a perfect market would result in a uniform price for "a commodity" (for example, wheat) plus or minus appropriate price differentials for different classes and grades within that "commodity."

That is, No. 1 Hard Red Winter wheat in a certain market might be worth to the consumer 2 cents per bushel more than No. 2 wheat. But if the market were paying the producer 3 cents per bushel more, or only 1 cent per bushel more, the market would be inaccurate, or imperfect, just as much as if differences existed in prices at different geographical points or different points of time. A packer, buying butcher hogs (of given weights) pretty much at a "flat" price when actually the cutout values of those hogs might vary over a range of 50 cents or $1 per 100 pounds, would be operating an imperfect market with respect to form.

It is in this sense that the market in all the different commodities may be regarded as one vast all-embracing market. We commonly regard the different markets for the different grades, weights, and classes of beef cattle, with their relationships determined by their differences in form, as the beef cattle market. Similarly, in a broader view, the markets for different kinds of livestock (cattle, hogs, sheep, poultry, etc.) make up the livestock market. The livestock market is one element in the general food market, and cannot get very far out of line with other foods in that broad market. And so on to other groups of commodities.

SUMMARY

In a perfect market a uniform price prevails. Since most markets (groups of traders) are scattered over a considerable area of space, the "uniform" price in a perfect market is uniform plus or minus transportation and handling charges from one geographical point to another. This traditional test of uniformity in *space* is supplemented in this appendix by a corresponding test of uniformity in *time* (plus or minus storage and handling costs from one period of time to another while basic supply and demand remain unchanged). Finally, a third test of market perfection is offered—the uniformity of prices for different grades of a product, or uniformity in *form* (plus or minus conversion [processing] or production costs from or between different grades). These three tests of criteria correspond with the orthodox division of utilities, in economic theory, into space, time, and form utilities.

APPENDIX B

The Graphic Presentation of Seasonal Patterns

The average seasonal pattern of prices from month to month through the year usually is shown by plotting the data in a simple time chart with prices up the side and the twelve months of the year along the bottom. Charts of this nature sometimes include an additional line showing the seasonal pattern of production or receipts of the commodity month by month. The two lines usually show an inverse relationship. A typical chart of this sort, reproduced direct from a marketing bulletin dealing with seasonal movements of prices and production,[1] is shown in Figure 66.

Charts of this kind provide a clear picture of the qualitative relation between prices and production or receipts throughout the year, but they may convey a misleading impression as to the *quantitative* relation between prices and production if the scales are not properly drawn. Figure 66, for example, would leave most readers with the impression that the average seasonal fluctuation in butter prices is about as great as the average seasonal fluctuation in butter production. Closer inspection of the chart, showing that the scales are both broken at the bottom, would raise a question in some readers' minds as to the accuracy of this impression, but only the technically trained reader would go further and carry through the mental arithmetic involved in comparing the proportions of the parts of the two scales shown.

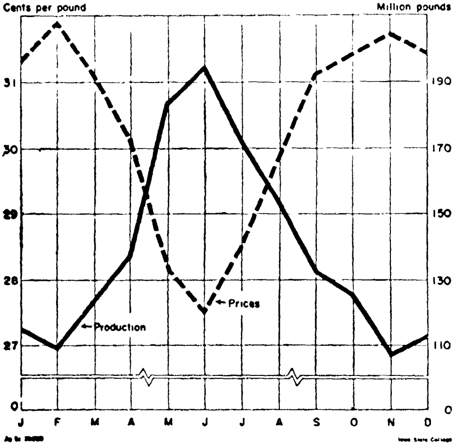

FIG. 66.—Average seasonal pattern of creamery butter production, and prices of 92-score butter at New York City, 1929–38.

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[1] Eugene Hamilton, *Seasonal Market Variations and Their Importance to Iowa Farmers,* Iowa Agr. Exp. Sta. and Iowa Agr. Ext. Serv., Bul. P5 (New Series), 1940, p. 200.

Yet a little computation shows that the price scale is nearly four times as great as the production scale. The two scales would not run down to zero at the same point. Actually, the fluctuation in butter prices is only about one-fourth as great as the fluctuation in production. Butter prices are much more stable than butter production; they fluctuate only one-fourth as much as production.

There are several ways of avoiding this sort of misrepresentation. One way is to make both scales run down to zero at the same point at the bottom of the chart, using no broken scales at all. This is shown in Figure 67, reproduced directly from another marketing publication.[2] A feature of this sort of chart is that it either leaves a large amount of space blank, below the lines on the chart, or, if the vertical scales are compressed in order to prevent this, makes the fluctuations in prices appear small. (The latter alternative was chosen in Figure 67.) Perhaps this should be considered an asset rather than a shortcoming; the statistician would argue that if the fluctuations actually are small, proportionally, they should be shown that way. Farmer readers, however, might feel differently about the matter. They might argue that even a small fluctuation in prices means a large fluctuation in profits, and profits are what they are interested in.

Another way of handling the chart is to use large (but still proportionally equal) price and production scales; that is, make a very "tall" chart (long from top to bottom) and then cut off the lower half. This shows up the fluctuations more clearly, but does not show directly how great the fluctuations are proportionally. And it does not enable direct comparison of one chart with another, unless the same amount (for example, the lower half) is cut off all the charts. Still another way is to use logarithmic scales. This is a very good method in most technical respects, but it has the disadvantage of being not perfectly clear to the nontechnical reader.

Then what is the best method to use? There is no one method that best suits all purposes. The thing to do is to use the method that best conveys the particular message to the particular audience involved. For a technical audience, perhaps the best method is not to use a time chart at all, but to use a scatter diagram. This shows the relation between the two in demand curve form, and enables observation of any curvilinearity in the relation. This demand curve is not the consumers' demand curve, but the dealers'.

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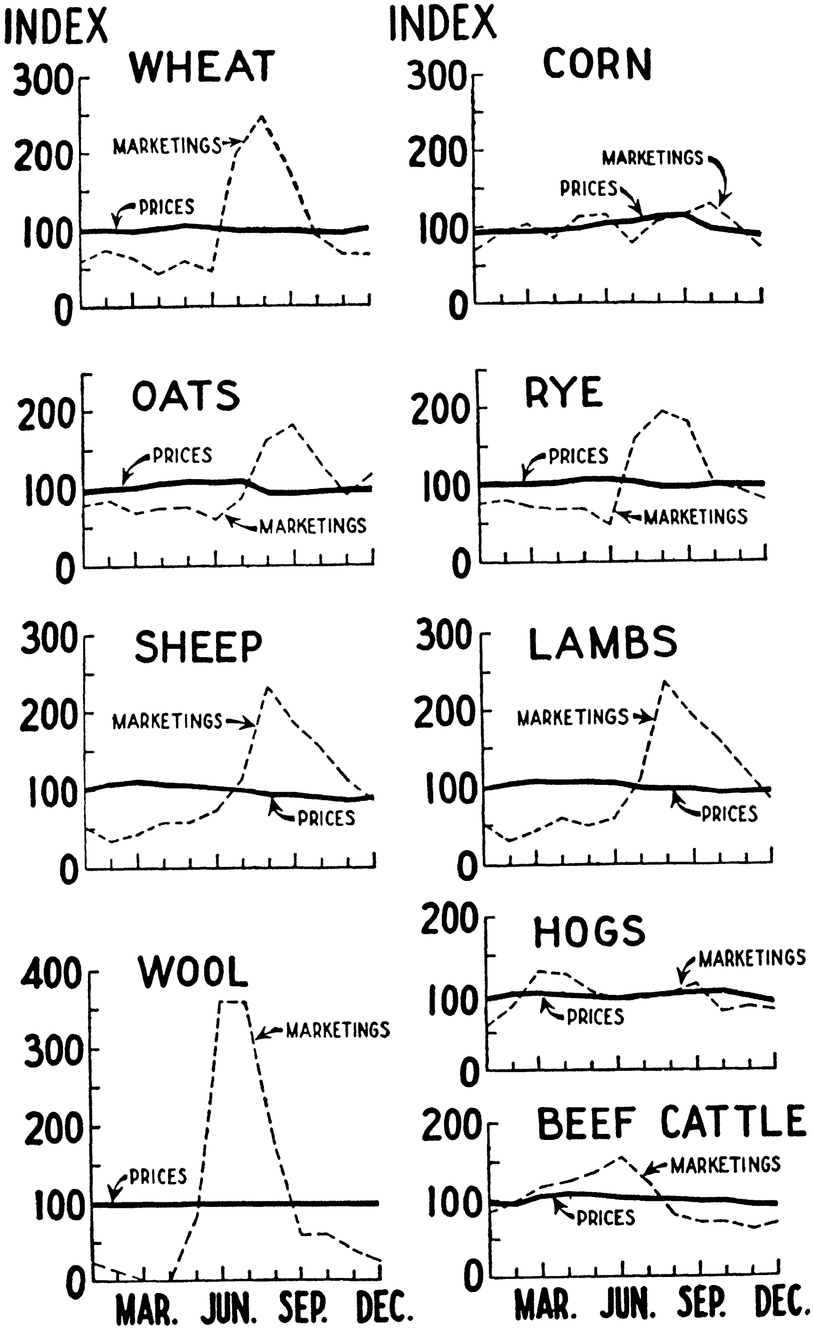
[2] Ellen F. Anderson and F. P. Weaver, *Prices and Pennsylvania Agriculture,* Pennsylvania State Coll., Bul. 384. 1939, pp. 17–19.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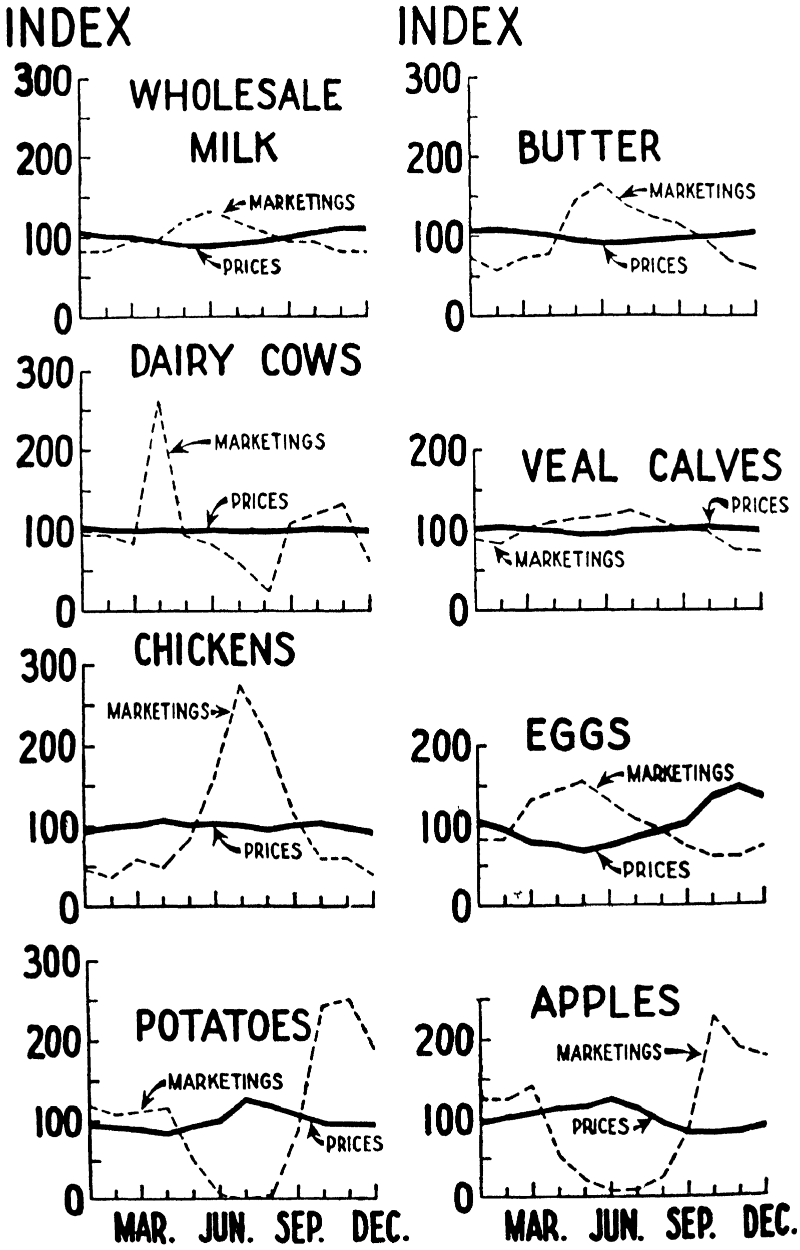

FIG. 67—Average seasonal patterns of the marketings and prices of various Pennsylvania farm products, 1933–37 (Courtesy Pennsylvania State College).

APPENDIX C

The Effect of Changes in Distribution Costs

If anything could be done about reducing margins, at the retailer's store or anywhere else along the line, who would get the benefit—the farmer, or the consumer? Or would both benefit? And conversely, if margins were widened, who would be hurt?

This question is important, not only because of the perennial interest in marketing margins, but because of the new problems presented by processor subsidies and possible future processing taxes. Changes in other marketing costs are slow, comparatively small, and difficult to bring about; but processing taxes may be large (the AAA processing tax on hogs was $2.25 per 100 pounds, more than half the price the farmer received during the first few months of its application), and they can be levied or taken off over-night. A further reason for interest in this question is the fact that many farmers are concerned about the effect of consumers' cooperatives on marketing margins and farm prices.

The conceptual tools developed in courses in economic theory and extended in the previous sections can be applied to the investigation of this question with fruitful results, which in some cases also can be confirmed by statistical data. We will deal with the conceptual tools first, and proceed then to the inductive confirmation.

THE SLOPES OF THE DEMAND AND SUPPLY CURVES

When costs of distribution increase, as, for instance, when freight rates are raised or a processing tax is levied, who pays the bill? Does the producer receive less, or does the consumer pay more? And if they divide the burden between them, what determines how much of the load will be borne by the producer, and how much by the consumer?

It should be recognized from the first that the question concerns not one market, but two different markets.[1] These markets are definitely related to each other, but they are two distinct markets with respect to place. The one is the producer's market, where the goods are sold; the other is the consumer's market where the goods are purchased.

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[1] The use of the term "market" here is restricted to the place or area aspect. Fundamentally, the two markets are one and the same market; the prices in one depend directly upon the prices in the other; the two markets are hooked up "in series," separated only by the transportation and handling charges required to bridge the distance between them. But it is precisely this separation by the amount of the transportation charges that is the object of this study.

The exposition will be clearer if it runs in terms of some specific commodity whose costs of distribution have increased. Beef cattle may be used as an illustration. No pure consumer's or producer's market for beef cattle exists, of course; but New York, the heaviest consuming state, can be used as a representative consumer's market.

We may assume that the shipping charges for beef cattle from Iowa to New York were roughly $1.00 per 100 pounds before World War I and increased to approximately $2.00 per 100 pounds afterward. The average farm price of beef cattle in Iowa may be taken as $7.00 per 100 pounds, in our example.

Thus far our assumptions correspond fairly closely to the facts. The final step in outlining the problem, however, calls for one simplifying assumption that is very far from the facts. In order to carry through the reasoning in the simplest terms, we shall assume that all of the beef cattle are produced in Iowa, and all of them are consumed in New York.[2]

Each one of these markets has its own pair of demand and supply schedules. The two pairs are similar; the series of quantities are the same at both markets. The only difference is that the prices in the New York schedules are all $1.00 per 100 pounds higher than those of the Iowa schedules. If a graph of the New York schedules were superimposed on a graph of the Iowa schedules, the New York curves would both lie $1.00 higher in the graph than the Iowa schedules; otherwise, the two pairs of curves are identical.

At each market only one schedule is a basic or primary schedule; the other is derived from the corresponding schedule at the other market. In the Iowa market, for example, the supply schedule is basic or primary. It is based directly upon the costs of raising different quantities of beef cattle in Iowa. It is not affected by changes in the cost of getting beef cattle to New York. Changes in this cost will affect the *demand* curve for beef cattle in Iowa, and the new demand curve will cut the Iowa supply curve at a lower point. The quantity of beef cattle demanded will change. The position of the *supply* curve at the Iowa market will not be affected, for it is based on the costs of producing different quantities of beef cattle in Iowa, and nothing has happened to change these costs.[3] But the demand schedule at the Iowa market is not a primary schedule. It is a derived schedule, derived from the demand schedule at New York, simply by deducting the cost of getting beef cattle from Iowa to New York from the prices at New York. It is directly and fully affected by changes in the cost of transportation.

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[2] After the argument has been worked through on this basis, this assumption can be removed and the reasoning applied to the more complex situation actually existing in the United States, in which beef cattle are produced and consumed all over the country, with intervening distances ranging from nothing to more than a thousand miles between producer and consumer. This application would not change the essential nature of the reasoning here laid down.

At New York, the demand schedule is basic or primary. It is based directly upon the desires and purchasing power of the consumers of beef located there. Changes in the cost of getting beef cattle from Iowa to New York do not affect the New York demand schedule, because these changes do not affect the factors on which the New York demand schedule is based. But the New York *supply* schedule is not a primary schedule. It is derived from the basic Iowa supply schedule by adding the cost of getting beef cattle from Iowa to New York, and is therefore directly affected by changes in that cost.

The schedules showing the pre-war and postwar situation are shown below in Table 41. The data are purely hypothetical. They are represented graphically in Figure 68.[4] Equilibrium for the period before the war is reached at a quantity of 7 billion pounds and a price of $7.00 per 100 pounds in Iowa and $8.00 in New York.

After the war, shipping charges increased from $1.00 per 100 pounds to $2.00. This has no effect upon either of the two primary schedules—the supply schedule for beef cattle in Iowa and the demand for beef cattle in New York. The cost of raising different quantities of beef cattle remains the same in Iowa, the series of prices that consumers will pay for different quantities in New York are unchanged.

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[3] We are speaking here of supply curves, not cost curves. A supply curve is the locus of the intersection points of different quantities of beef cattle with the different marginal costs of producing them. It should be clearly distinguished from a cost curve, which simply shows the costs of different producers for a given total quantity at a given instant of time, not the different marginal costs of producing different total quantities. *See* Marshall, *Principles,* pp. 810–12.

[4] These curves have slopes of −1 for the demand curves and +1 for the supply curves. The demand does not represent conditions of unit elasticity (except close at the center). Such curves would be concave from above on an arithmetic scale like the one used in the chart. But the actual demand curve for beef cattle (*See* Preston Richards, "Livestock Marketing Methods and Prices," *Journal of Farm Economics,* Vol. XXI, No. 1, February, 1939, p. 220) is straight, not curved like one of constant elasticity would be.

TABLE 41

SUPPLY AND DEMAND SCHEDULES FOR BEEF CATTLE, ELASTICITIES EQUAL
(Hypothetical Data)

Iowa

Demand Schedule			Supply Schedule	
Pre-war Prices*	Quantities†	Postwar Prices	Prices	Quantities
$9	5	$8	$5	5
8	6	7	6	6
7	7	6	7	7
6	8	5	8	8
5	9	4	9	9

New York

Demand Schedule		Supply Schedule		
Prices	Quantities	Pre-war Prices	Quantities	Postwar Prices
$10	5	$6	5	$7
9	6	7	6	8
8	7	8	7	9
7	8	9	8	10
6	9	10	9	11

* Prices in dollars per 100 pounds live weight.
† Quantities in billions of pounds.

But the derived schedules are directly affected. The supply prices for beef cattle in New York go up by the full amount of the increased shipping charges. It costs $1.00 per 100 pounds more now to deliver beef cattle in New York than it did before the change was made. The new supply schedule for New York is shown in the third column of the New York supply schedule. The prices in it are all $1.00 higher than the pre-war prices.

A similar but opposite change has taken place in the demand for beef cattle in Iowa. Consumers at New York previously would pay $8.00 per 100 pounds when 7 billion pounds of beef were produced. This meant that they would pay $7.00 per 100 pounds—that is, $8.00 minus $1.00 shipping charge—in Iowa. But now shipping charges have gone up to $2.00 per 100 pounds; so $2.00 instead of $1.00 per 100 pounds is clipped from the New York price. New York consumers now can pay only $6.00 per 100 pounds in Iowa for the same quantity for which they previously paid $7.00. Similarly with the other quantities in the schedule. This is shown by the third column in the Iowa demand schedule.

If we plot these new demand and supply schedules for Iowa and for New York we find that the equilibrium point on both markets is reached at a quantity of 6.5 billion pounds, with a price for that quantity of $6.50 per 100 pounds in Iowa and $8.50 per 100 pounds in New York. The burden of the increased middleman's charges has been divided equally between the producer and the consumer, and the production and consumption of beef have decreased from 7 to 6.5 billion pounds.

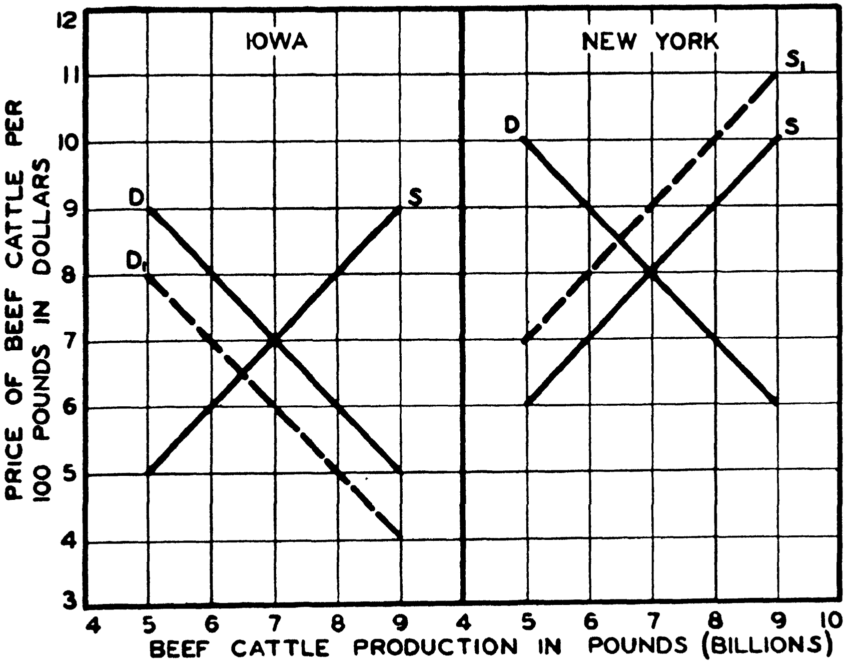

FIG. 68—Demand and supply curves for Iowa and for New York.

D Pre-war demand curve
D_1 Postwar demand curve
S Pre-war supply curve
S_1 Postwar supply curve

Pre-war shipping charge, $1.00 per 100 lbs. Equilibrium reached at a production of 7 billions lbs., with a price of $7.00 in Iowa and $8.00 in New York.

Postwar shipping charge, $2.00 per 100 lbs. Equilibrium reached at a production of 6.5 billion lbs., with a price of $6.50 in Iowa and $8.50 in New York.

The reason that the burden was divided equally between the producer and the consumer is that the demand and supply curves both have the same elasticity, namely unity. The burden would have been just as equally divided if the elasticities of the supply and demand curves had been some other figure, but equilibrium would have been reached at a different quantity from that just worked out. With an elasticity of —.5 for the demand curve and +.5 for the supply curve, equilibrium would be reached at 6 instead of 6.5 billion pounds.

The case is different, however, when the elasticities of the demand and supply curves are unequal. Then the burden is unequally divided between the producer and consumer. This can be shown by replacing the demand schedule just employed with one of —.5 elasticity. Under these conditions, a reduction in quantity of 1 billion pounds causes a rise in price of $2.00 per 100 pounds instead of $1.00. This situation and the effects of an increase in shipping charges from $1.00 to $2.00, are shown in Table 42 and Figure 69.

The new equilibrium this time is reached not at 6.5 billion pounds but at 6.66 billion, and at a price of $6.66 in Iowa and $8.66 in New York, instead of $6.50 and $7.50, respectively. The production of beef cattle, therefore, has been reduced less than in the former case. More of the burden of the increased shipping charges is borne by the consumer and less by the producer.

APPLICATION

These principles can be applied directly to the controversial question as to the effect of processing taxes upon producer, processor, and consumer, such as were levied during the early years of the AAA program. A processing tax is similar to an additional cost of distribution. Who pays it?

Direct observation of processor's margins, in the case of the early AAA processing taxes, showed that these margins were widened by approximately the full amount of the tax. The processor did not pay the tax; he shifted it. The question is, which way—forward to the consumer, or backward to the producer?

Many consumers thought that the tax was being shifted forward to them. They thought they were being asked to pay higher prices than before—higher prices for the same amounts as before. This was a mistake. If a demand curve means anything at all, it means that consumers will pay the prices given in the demand schedule for the quantities given, but no more. If a tax could be added directly to prices, that would simply lead consumers to buy less than before. Now in the case of a perishable commodity, already produced, the farmer cannot accept this solution. He cannot sell less than he had already produced, because the rest of the commodity would simply go to waste. We say he cannot do this: what we mean is that if he

TABLE 42

SUPPLY AND DEMAND SCHEDULES FOR BEEF CATTLE, ELASTICITIES UNEQUAL
(Hypothetical Data)

Iowa

Demand Schedule			Supply Schedule	
Pre-war Prices*	Quantities†	Postwar Prices	Prices	Quantities
$11	5	$10	$5	5
9	6	8	6	6
7	7	6	7	7
5	8	4	8	8
3	9	2	9	9

New York

Demand Schedule		Supply Schedule		
Prices	Quantities	Pre-war Prices	Quantities	Postwar Prices
$12	5	$6	5	$7
10	6	7	6	8
8	7	8	7	9
6	8	9	8	10
4	9	10	9	11

* Prices in dollars per 100 pounds live weight.
† Quantities in billions of pounds.

does, his own feelings and those of consumers are outraged by the thought of good food being wasted. That is what happened when 6 million small pigs and sows were slaughtered and removed from the commercial food market by the AAA in 1934. The public reaction, whether well founded or not, was strongly adverse, although acquiescent in policies of greatly curtailed industrial production at the same time. The situation amounts to this: for all practical purposes, during the period after a perishable good has been produced (farrowed, in the case of hogs) and before it reaches the consumer, the producer's supply curve is almost completely inelastic. That being so, the producer bears the full burden of the tax; he sells a given quantity at prices that are lower than before by the full amount of the tax.

The statements in the paragraph above were verified in the case of hogs by statistical test, after the AAA processing tax of $2.25 per 100 pounds live weight had been in effect for about two years. It was shown that while the tax was in effect, the price that consumers paid for pork was not raised, whereas the price the farmer received for hogs was lowered by approximately the full amount of the tax, below the normal relations between supply, demand, and price.[5] If

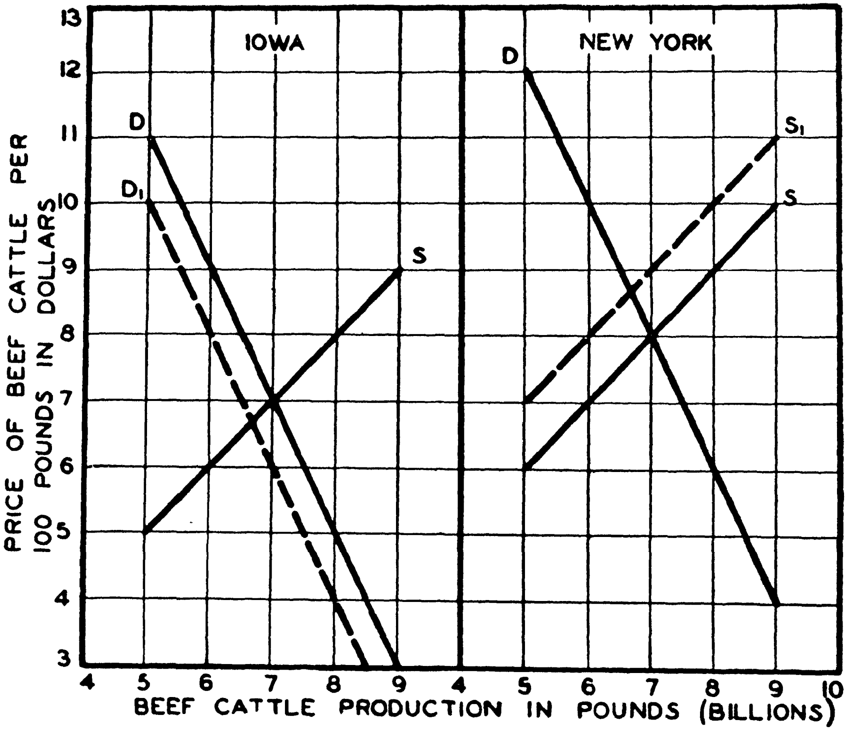

FIG. 69—Demand and supply curves for Iowa and for New York, inelastic demand.

D Pre-war demand curve
D_1 Postwar demand curve
S Pre-war supply curve
S_1 Postwar supply curve

Pre-war shipping charge $1.00 per 100 lbs. Equilibrium reached at a production of 7 billion lbs., with a price of $7.00 in Iowa and $8.00 in New York.

Postwar shipping charge $2.00 per 100 lbs. Equilibrium reached at a production of 6.66 billion lbs., with a price of $6.66 in Iowa and $8.66 in New York.

the tax had not been invalidated by the Supreme Court—if it had continued in effect for many years—and if hog farmers' supply curves had remained unaffected by payments for participating in

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[5] *See* "The Incidence of the Cost of AAA Corn-Hog Program," *Journal of Farm Economics,* Vol. XVI, No. 3, July, 1934, pp. 417-30, and "The Incidence of the AAA Processing Tax on Hogs," same journal, Vol. XVII, No. 2, May, 1935, both by the present author; and *Analysis of Processing Taxes,* U. S. Treasury Dept., 1937.

AAA programs, one could have expected the lower price resulting from the imposition of the tax to have had the effect of gradually reducing hog production. In that case, the price that consumers pay for pork would still fall on the consumers' demand curve, and the price that farmers receive for hogs would still fall on the farmers' supply curve; but less hogs would be produced and less pork sold than before. The burden of the tax would be borne by the producers and consumers (in the shape of lower and higher prices, respectively, corresponding with the smaller amounts produced and consumed) inversely in proportion to the relative elasticities of their supply and demand curves.

GENERAL CONCLUSION

This appendix can be summarized in these words (the statement is put in terms of a decrease in middleman's margin; the effects of an increase in middleman's margins is the converse of these): A decrease in middleman's margins (1) increases production and consumption (by the same amounts, since what is produced is consumed, no more and no less); and (2) both lowers prices to consumers and raises prices to producers, by amounts which added together equal the decrease in the middleman's margin. The division between the producer and consumer depends upon (is inversely proportional to) the relative elasticities of their supply and demand; the one with the more elastic curve gets the smaller share.

APPENDIX D

Federal Regulation of Agricultural Markets[1]

The marketing of farm commodities, in both their natural and their processed forms, is a vast and complicated process in this country. Generally speaking, an efficient system of marketing has been developed, but there is and always will be room for improvement. Higher efficiency is as worth striving for in distribution as in production; and we may reasonably expect producers, distributors, and consumers all to insist on such additional help in marketing as the federal government can give them through the administration of regulatory and service laws.

The USDA administers some 25 separate laws related to the marketing of farm commodities. Federal legislation on this subject began about 1914; before that time marketing had been regarded largely as a local problem, with some regulation and assistance by states and municipalities. The rapid development of transportation, refrigeration, and large-scale production, especially of the more perishable commodities, had permitted producers to seek markets farther and farther from home.

Widespread confusion had developed in the use of terms for describing the quality and condition of farm commodities. Various state and trade standards had been established for some commodities, but they were not uniform and consequently were not adapted to long-distance transactions and to distribution on a national and international scale. Various forms of abuses and unfair practices had arisen. The farmer badly needed a way of knowing the probable value of the commodities he had produced. Congress considered the marketing of farm commodities in interstate and foreign commerce as a proper subject for federal legislation.

STANDARDIZATION AND INSPECTION LAWS

Many of the statutes administered by the USDA are the so-called "standardization and inspection laws." They provide for establishing official standards of description, and authorize official inspection and certification under certain conditions. The first to be passed was the Cotton Futures Act. Briefly, this act requires the levy of a tax of 2 cents a pound for the cotton involved in each contract for future delivery made on any exchange, board of trade, or similar institution unless the contract conforms to the act and the rules and regulations of the Secretary of Agriculture for its administration. The tax need not be paid when, among other things, the cotton delivered in settlement of futures contracts conforms to the official standards as promulgated by the Secretary, and when it has been classed and certificated by officers of the government. The act also limits the qualities of cotton that may be tendered in settlement of futures contracts, specifies certain provisions that shall be included in the contract, and requires settlement in accordance with premiums or discounts established in the manner prescribed, when cotton of other than the contract grade is delivered in settlement of the contract.

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[1] The descriptive material in this appendix is adapted from two articles in *Marketing Activities,* USDA, March, 1945 and May, 1945, and from other sources as noted.

The authority to establish standards and require cotton classification under this act applied only to futures contracts, not spot transactions. So in 1923 the Cotton Standards Act was passed. It also provides authority to establish official standards, makes unlawful the describing of cotton by grade in any transaction in interstate or foreign commerce unless the description conforms to the official standards, and authorizes the Secretary to classify cotton upon request of any person who has a financial interest in the cotton and who may submit a sample for classification. The act does not prohibit sales on the basis of individual samples, nor does it require the official classification of all cotton sold in interstate or foreign commerce.

GRAIN STANDARDS

The United States Grain Standards Act was passed in 1916. It authorizes the Secretary of Agriculture to establish official standards for grain and requires the use of official standards whenever grain is sold by grade. It permits the sale of grain by sample or by type, or under any name, description, or designation provided the designation is not false or misleading and does not include the terms of the official standards. Going further than the Cotton Standards Act, the Grain Standards Act requires the inspection of grain shipped, delivered, offered, or consigned for sale by grade by an inspector whom the Secretary has authorized to inspect grain, provided the grain moves from or to a place where an official inspector is located. Thus provision has been made for both permissive and mandatory official inspection. Grain inspection is mandatory under certain conditions, as is the inspection of cotton when it is delivered in settlement of futures contracts. Cotton not delivered on futures contracts may be officially classed or not, depending on the wishes of the buyer or seller. Official inspection of fruits and vegetables, dairy and poultry products, meats, and several other commodity groups is mostly on a permissive basis.

TOBACCO GRADING

In the Tobacco Inspection Act of 1935, Congress dealt somewhat differently with official inspection. About 90 per cent of the tobacco marketed by producers is sold at public auctions. Tobacco-grading requires a degree of skill most tobacco farmers do not possess. Consequently, tobacco growers were largely without information about the quality of the tobacco they offered for sale.

In the Tobacco Inspection Act, Congress did not require that all tobacco should be inspected before sale at auction but left the decision to the growers. The act requires that before inspection becomes mandatory on a particular market or group of markets, the Secretary of Agriculture shall hold a referendum to determine what the growers want in that regard. When two-thirds of the growers voting in a referendum favor inspection, the Secretary may issue an order designating that market (or those markets), and afterward no tobacco may be offered for sale thereon until the tobacco has been inspected and certified by authorized inspectors of the Secretary according to standards established by him under the act.

COTTON CLASSING (GRADING)[2]

Somewhat similar service was provided for cotton producers under the Smith-Doxey Act of 1938. This act directs the Secretary of Agriculture to furnish cotton farmers, who organize to improve their cotton, the following services upon written request:

1. Free classification (grading) of cotton produced by each organized group.
2. Timely information on the market supply, demand, location, condition, and market prices for cotton.

This service has grown, on a voluntary basis, until about a third of the cotton crop now is graded under the Act.

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[2] This section is adapted from James F. Hudson, *Progress of the Smith-Doxey Service*, Louisiana Rural Economist, August, 1944, Louisiana State Univ.

The uses that can be made of the service vary with the individual needs and existing conditions of the cotton growers in the various localities within the state. Some of the more general uses made of the classing and market news service are as follows:

1. It provides farmers and ginners with the grades, staple length, and preparation of each bale submitted.
2. It is used as a basis for direct sale or serves as a guide in selling.
3. It demonstrates to farmers the importance of proper picking and handling of cotton before ginning. This results in cleaner and less wet cotton coming to the gin and enables the ginner to do a better job at less cost.
4. It gives the ginner a close check upon the operation of his gin, enabling him to reduce the amount of rough cotton resulting from faulty ginning.
5. Where cotton is pooled or sold in lots this classification may be used to segregate bales in even running lots and to prorate each member's share of the sales.
6. From 1938 through 1943, inclusive, the Commodity Credit Corporation accepted Form 1 classification as evidence of the grade and staple length for loan purposes.
7. It serves as a check on varieties where two or more are planted, thereby helping the farmers to determine the better variety to plant. This in turn results in fewer varieites in the community, less intermixing at the gin and a better quality of cotton.
8. On the larger plantations the classification may be used to make settlements with tenants, thus furnishing them an incentive to handle their cotton more carefully and strive for better qualities.
9. Market news, provided by the service, may be used as a basis for figuring the approximate market value of each bale.

THE PREVENTION OF UNFAIR MARKETING PRACTICES[3]

There is another group of laws whose purpose primarily is to prevent unfair practices. Notable in this group are the Packers and Stockyards Act, the Perishable Agricultural Commodities Act, the Insecticide Act, the Warehouse Act, the Federal Seed Act, the Naval Stores Act, the Produce Act, and some others.

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[3] H. E. Reed, Assistant Chief, Agricultural Marketing Service, *Livestock Marketing Problems and the Packers and Stockyards Act,* Central Cooperative Association, St. Paul, Minnesota, February 13, 1940.

THE PACKERS AND STOCKYARDS ACT

The Packers and Stockyards Act was passed in 1921 primarily for the protection of livestock producers. For some time prior to 1921, many livestock producers were of the opinion that all was not right in our marketing procedure, and a number of producer organizations had been working for legislation to correct the situation. About that time the Federal Trade Commission, acting under broad powers—much broader investigative powers than the Department of Agriculture has under the present act—made a sweeping investigation of the packing industry. Its report condemned many of the practices that some of the packing companies engaged in. There was a belief that large packers, through stockyard ownership and other controls, dominated markets, influenced the movement of livestock, controlled prices, assessed exorbitant marketing charges, and engaged in other practices which reduced returns to shippers. The report of the Federal Trade Commission led up to the Consent Decree, which, in turn, divorced packers from control of the terminal livestock markets.

In addition, the report helped to crystallize public opinion in favor of legislation that would give some competent federal agency authority to regulate the marketing of livestock. The report also was instrumental in causing the packing industry, stockyards, and the related businesses of buying and selling livestock on commission and speculating in livestock at public stockyards to be singled out for regulation. The Packers and Stockyards Act delegated such authority to the Secretary of Agriculture and charged him with the duty of formulating regulations to govern operations of the regulated businesses.

The provisions of the Act apply to packers' operations and to buying and selling activities on posted stockyards. Stockyards coming under the jurisdiction of the Act are those conducted or operated for compensation or profit as a public market and with pens and other inclosures totaling more than 20,000 square feet in area. By posting is meant notifying the public that no person shall carry on the business of a market agency or dealer at the stockyard unless he is properly registered under the Act.

One of the principal matters recommended by the Federal Trade Commission for correction was rates and charges. The Packers and Stockyards Act gives the Secretary of Agriculture the duty of seeing that charges are just, reasonable, and nondiscriminatory. Accordingly, all posted stockyards and the agencies operating on them are required to file with the United States Department of Agriculture, and to make available to the public, schedules stating the charges for the several stockyard services. Once these charges are filed, it is unlawful to depart from the schedule without giving 10 days' notice to the Secretary of Agriculture by filing a new schedule. A farmer or shipper knows beforehand what he must pay for marketing his livestock through a posted yard. Markets that are not posted under the Act or are not under some form of state control are under no legal restraint as to the charges they make, and the charges may be varied from time to time at the owner's wish.

A second feature of the Act's administration which has been very important and has given shippers a great deal of protection is the requirement that market agencies and dealers carry a bond to guarantee fulfilment of financial obligations. The amount of the bond depends on the volume of business handled by each agency. Our records show that in approximately 40 failures of market agencies, bonding companies have been called upon to pay the amounts due shippers. There have been a few cases where the bond, for one reason or another, was not large enough to cover the full amount owed to shippers. In most of those instances the stockyard company and market agencies, rather than have a stigma of default on their market, have "passed the hat" and made up the amount due the shippers. At the present time coverage at the various markets amount to about 12 million dollars.

A third important feature of the administrative work has to do with trade practices. Some of the trade practices which need correction cannot be classified as violations of the Act. They begin in an innocent sort of way with no intention to defraud. The objection to them is that they lead to developments which place producers and shippers at a disadvantage and react unfavorably to the market. In such cases a live-wire supervisor can head off many difficulties. With the cooperation of the yard companies and market agencies a great deal along this line has been accomplished.

Under the Packers and Stockyards Act, cease and desist orders may be issued against packers after a hearing, and packers may be required to attend and testify. Reparation orders also may be issued after a hearing unless hearing is waived. Licenses of live poultry dealers may be suspended or revoked after a hearing. Formal proceedings are conducted by an examiner assigned by the Solicitor, with an attorney also assigned by the Solicitor as counsel for the administrative agency.

In these proceedings, as in most proceedings under other acts, specific rules of practice developed by the Solicitor provide that the examiner shall prepare a report at the conclusion of the hearing and after the filing of briefs. Copies of the report are served upon the administrative agency and the respondent opportunity being given for filing exceptions. After the exceptions have been considered, a draft of the proposed order is prepared and made available to both parties, who may present oral argument to the Secretary, or someone designated by him, and before the final order is issued. The rights of the respondents are further protected in that there is opportunity to appeal to the courts.

PERISHABLE AGRICULTURAL COMMODITIES ACT

The Perishable Agricultural Commodities Act, commonly known to the industry as the PACA, is the government's answer to the clamor of the trade for protection against unfair practices in the marketing of perishable agricultural commodities in interstate or foreign commerce. The first legislation along this line was an emergency measure known as the Food Control Act, approved August 10, 1917, which was brought about by conditions at the time of World War 1. Later, it became apparent that some permaent regulation was essential, and the cooperation of the government and the trade resulted in the passage by Congress in 1930 of the PACA, which is administered by the Production and Marketing Administration.

The Act requires commission merchants, dealers, and brokers to be licensed, and provides for denial of license to persons found unfit to engage in business. The licenses are issued only by the Washington office upon application made to the Regulatory Division of the Fruit and Vegetable Branch, Production and Marketing Administration, Washington, or to any PACA field representative, accompanied by remittance of the annual fee of $10. A license is renewable from year to year, upon payment of the fee, as long as the licensee remains in good standing. To operate without a license makes the offender liable to a penalty of not more than $500 for each offense and not more than $25 for each day it continues.

PROHIBITIONS AND REMEDIES

The Act prohibits certain unfair practices, and is designed to afford remedy to the injured person be he buyer, seller, commission merchant, or broker, through the filing of a reparation complaint charging violation of any provision of the act by anyone who comes within its scope. The violations which these complaints cover are (1) rejection, without reasonable cause, by a buyer; (2) failure, without reasonable cause, of a seller to make delivery or failure to make good delivery; (3) failure truly and correctly to account (which includes failure to pay any amount due); (4) the making of false or misleading statements for a fraudulent purpose; and (5) misbranding.

The services of the Regulatory Division are for the benefit of any injured person who wishes to make use of them and there is no charge for services rendered. Although all money collected is turned over to the United States Treasury, the Division really is more than self-supporting in that each year the amounts received exceed by from $25,000 to $40,000 the expenditures of the offices maintained to serve the trade. At the close of the last fiscal year 19,305 licenses were in effect. License fees, arrearages, and penalties collected during the year amounted to $212,000.

Initial complaints are filed informally with the Washington office, or with one of the field offices located at New York City, Chicago, Los Angeles, Winter Haven, Florida, and Portland, Oregon, all of which act as a closely knit unit. Such a complaint is handled informally, the Division immediately communicating with the party against whom it is filed, conducting an investigation, and trying to effect a friendly adjustment of the misunderstanding or controversy between the parties. Ordinarily this is done by mail, but more urgent cases, such as when there is a disagreement over a car of highly perishable produce standing on track, require quicker action. Service on urgent matters is available every day including Sunday. Complaints may be filed by telegraph or telephone. The only long-distance telephone to the War Food Administration that was not wired through the central switchboard (Republic 4118) was that installed in the Regulatory Division's Washington office to enable the trade to place station-to-station calls. During the 1944 fiscal year 2,058 complaints were filed, but they do not truly measure the value of the service because they do not take into account all the numerous demands upon it for information, advice, and opinions.

INTERPRETATION OF CONTRACTS

Another job of the Regulatory Division is to review and interpret the terms of contracts entered into by members of the fresh fruit and vegetable industry. A contract is defined as an agreement between two or more parties to do or not to do certain things. In order that it may be valid and binding, there must be a complete meeting of the minds of the parties. For example, a buyer orders a carload of U. S. No. 1, size A potatoes. The seller, in response, confirms a carload of U. S. No. 1 potatoes. There has been no meeting of the minds because the buyer specified size A, where as the seller confirmed merely U.S. No. 1, omitting the buyer's size A specification. The seller must meet all essential specifications of the contract if he is to demand acceptance by the buyer. If one specification calls for "prompt shipment," but the seller applies on the order a "rolling car," then the seller cannot demand the buyer's acceptance because shipment has not been made at the time specified.

Frequently valid and binding contracts are completed and the goods are on wheels when the market for the particular commodity suddenly takes a downward trend. The buyer wires the seller and requests cancellation of the order. The seller is not compelled to cancel the order and the buyer may be required to accept the goods even though a loss stares him in the face. It has been held in PACA decisions that a declining market does not justify refusing the acceptance of a carload of produce. Inability to pay for produce purchased or received on consignment is not a good defense to a complaint filed under the act.

For the past several years, when no agreement between the parties could be reached, there has been an increasing tendency to submit the dispute for an informal determination by the Regulatory Division. Each party presents a detailed statement of the facts and whatever evidence he has to offer. On this basis an opinion is rendered representing the unanimous opinion of the Division's three investigators.

All efforts aimed at informal settlement failing, formal complaint is accepted and submitted to the Office of the Solicitor for whatever action may be deemed appropriate. If the formal decision, rendered by the Secretary of Agriculture, awards reparation, the offender's license is automatically suspended by operation of law unless the offender makes payment within the time specified in the order or appeals to the United States District Court, and it is a violation of the law for him to continue to receive, ship, buy, or sell fresh fruit or fresh vegetables in interstate commerce during the suspension period.

Disciplinary complaints are begun on the basis of information showing repeated or flagrant violations of the act, including failure to make and preserve for a period of two years a complete record of every transaction, which must be available for official examination. Purpose of the proceedings is the suspension or revocation of the offender's license, and the Secretary of Agriculture has the power to render decisions taking such action. The law also provides for proceedings to determine whether an applicant for license is fit to engage in business, and to deny license if he is found unfit.

UNITED STATES WAREHOUSE ACT

The United States Warehouse Act, which provides for the licensing and bonding of public warehouses engaged in storing certain agricultural commodities, was created for the primary purpose of providing a system of safe storage of farm products, with a warehouse receipt which would be widely accepted as collateral for loans to be used in marketing. Licensing under the act is optional with a warehouseman, but after he has elected to become licensed he is subject to severe penalties for violation of the act and regulations. Before a license is granted, the warehouseman must have sufficient financial assets, obtain a sufficient bond, and his warehouse must be suitable for storing the commodities to be handled.

FEDERAL SEED ACT

The Federal Seed Act requires the labeling of agricultural and vegetable seeds when shipped in interstate commerce. Agricultural seed is required to comply with the law with respect to noxious weed seeds of the state into which the seed is shipped, and must also be labeled to show the kind of seed, percentage of weed seed, and the germination. Vegetable seeds are required to be labeled as to variety and must comply with the standard of germination established in the regulations or be labeled with the words "below standard." The Act also prohibits false advertising. Importations of seed are required to meet a standard of quality determined by the percentage of pure seed, germination, and the freedom from weed seed. Imported alfalfa and red clover seed are required to be stained to show whether they are generally adapted in the United States.

The Federal Seed Act provides for three methods of enforcement: (1) prosecution through the courts; (2) orders to cease and desist, and (3) seizure. Except for the Federal Seed Act and the Insecticide Act, when prosecution is used, no administrative proceedings are necessary other than the investigation and preparation of evidence for submission to the Department of Justice. The Federal Seed Act goes somewhat further, however, and provides that before a violation is reported for prosecution the respondent shall be given appropriate notice and opportunity to present his views. This is an informal proceeding conducted by an administrative officer. Hearings are required in cease and desist order proceedings, which are more formal and are conducted by an examiner assigned by the Solicitor of the Department. Prosecution is the only method of enforcement under the Insecticide Act, and notices in writing give the violator opportunity to be heard.

MARKETING AGREEMENTS

The foregoing statutes for the most part concern marketing services that can be more uniformly and authoritatively conducted by an official agency than in any other way, and that provide protection against unfair practices. The Agricultural Marketing Agreements Act of 1937, which represents a third type of marketing legislation, deals somewhat more specifically with marketing problems from the standpoint of income to producers. The declaration of policy in that act states: ". . . the disruption of the orderly exchange of commodities in interstate commerce impairs the purchasing power of farmers and destroys the value of agricultural assets which support the national credit structure and that these conditions affect transactions in agricultural commodities with a national public interest, and burden and obstruct the normal channels of interstate commerce."

The declaration of policy goes on to state that it is the purpose of Congress "to establish and maintain such orderly marketing conditions for agricultural commodities in interstate commerce as will establish prices to farmers at a level that will give agricultural commodities a purchasing power with respect to articles that farmers buy, equivalent to the purchasing power in the base period." While the word "parity" is not in the Act, the reference to the equivalence of purchasing power in a base period refers to the parity concept, although the Act is not limited to parity in the case of milk.

The Act permits marketing agreements with processors, producers, associations of producers, and others who handle any agricultural commodity or its products. The making of such agreements is declared to be no violation of the United States anti-trust laws, and contracting parties are eligible for Reconstruction Finance Corporation loans.

A marketing agreement may result from the voluntary action of producers and handlers, in which case all who sign are bound by its terms, but instruments such as this are rarely concluded. To effectuate the purposes of the statute, therefore, provision is made for making agreements mandatory under certain conditions. For example, when two-thirds of the producers handling two-thirds of the volume, and handlers of not less than 50 per cent of the volume, by referendum favor an agreement, the Secretary issues an order setting it up. However, if handlers of more than 50 per cent refuse to concur, the Secretary of Agriculture, with the approval of the President, may issue an order making the agreement mandatory upon all. An exception is citrus fruit in California, in which case approval of 80 per cent of the volume and 75 per cent of the producers is required.

Thus far, the Act has been used chiefly by producers of fresh fruits and vegetables, and milk. Most of the fresh fruit and vegetable agreements and orders have been based upon the limitation of shipments to specified grades or sizes. A few have been set up on a volume control basis, but the mechanics of straight volume control have been found very difficult for perishable commodities. The primary objective of agreements on fluid milk is to establish a minimum price to producers.

Under the Agricultural Marketing Agreements Acts a detailed procedure has been devised to protect the rights of the parties affected by marketing agreements and orders. All marketing agreements and orders are preceded by a hearing. The following steps, for example, are taken in the formulation of milk-marketing agreements and orders, or of amendments to milk orders:

1. Application from the industry requesting the Secretary of Agriculture to hold a hearing.
2. Investigation of the merits of the application, instituted by the Director of the Production and Marketing Administration.
3. Recommendation by the Director of the Production and Marketing Administration to the Secretary of Agriculture that a hearing be held.
4. Approval of a hearing, and the serving of notice by the Secretary of Agriculture.
5. Holding of the public hearing.
6. Preparation and filing with the hearing clerk of a report by the Director of the Production and Marketing Administration on the hearing, and of a proposed order or amendment.

7. Filing of exceptions to the Director's report.

8. Recommendation by the Director of a marketing agreement for tentative approval by the Secretary of Agriculture.

9. Approval by the Secretary of Agriculture of the agreement.

10. Holding of referendum among producers and submission of marketing agreement to handlers.

11. Approval by the President (Director of Economic Stabilization) if handlers of more than 50 per cent of the volume of milk in the market refuse to sign the marketing agreement.

12. Issuance of final order or amendment by the Secretary of Agriculture.

CONSULTATION WITH INDUSTRY

All these marketing statutes mentioned arose from the desire of certain groups for government assistance. The objective was to provide services and "rules of the game," things which experience had demonstrated could be provided most effectively by government. The policy underlying the administration of these laws has been developed on the premise of service, to prevent violations by explanation, information, and warning, and to invoke penalties only upon the recalcitrant few. A law can be of greatest service when those who must live with it and abide by it have had: (1) an opportunity to assist in its development in the legislative stages; (2) an even larger opportunity and voice in the formulation of the regulations to be used by the administrative agency; and (3) a full and fair opportunity to present their side of a dispute in any administrative proceeding and when administrative decisions are reviewable by the courts.

The principles and general outlines of many of these statutes were discussed by different elements of the industries affected and by administrative officials before hearings were held by committees in Congress. In the formulation of regulations it has been the policy to provide an opportunity for interested persons to offer suggestions and comments before the regulations or important amendments to them are promulgated. Of the laws mentioned, only the Federal Seed Act requires a public hearing before regulations and amendments are issued. The general practice is to draft proposed regulations and send copies to farm groups, trade associations, trade newspapers and journals, and persons and firms on departmental mailing lists, at which time comments, criticisms, and suggestions for changes are invited.

In most instances, if the proposed regulations are new or are important amendments to existing regulations, arrangements also are made for hearings to be held at from two to six or eight places reasonably convenient to most of the people interested. These meetings are really public conferences with no restriction on attendance or any particular formality of procedure. They are usually conducted by a representative of the administrative agency of sufficient rank to answer questions with considerable authority on administrative policy, procedure, and interpretation.

The usual procedure in such conferences is for the presiding officer to go through the proposed regulations paragraph by paragraph, explain the purpose of each, and then permit questions and comments. Usually technical experts of the administrative agency also are present to take part in such discussions. Sometimes a verbatim transcript is made, and sometimes notes are taken only of important comments and suggestions. Usually a reasonable time is allowed after a conference for those who wish to submit more detailed comments and suggestions in writing.

It is apparent from this brief description of a few of the laws administered by the Office of Marketing Services that their objective is to facilitate the marketing of farm commodities and to prevent abuses in the marketing process. Perhaps the main purpose of administrative agencies is to provide a means of preventing evils from developing, rather than of merely trying to correct them after they arise. Congress may declare a certain action to be a crime, and the declaration alone may be a sufficient deterrent—but often it is not. Or people may and do go into court and sue each other. That procedure usually is expensive and time-consuming, especially when long distances separate the parties; and results are uncertain. A more flexible method than either of these is required. The regulatory services of the USDA provide this more flexible method.

APPENDIX E

TABLE 43

PER CAPITA CONSUMPTION OF MAJOR FOOD CATEGORIES BY NONFARM FAMILIES (EXCLUDING MILITARY PERSONNEL AND INSTITUTIONAL GROUPS), BY INCOME LEVEL, UNITED STATES, 1941 (pounds) *

Food Category	Under $500	$500–$999	$1,000-$1,499	$1,500-$1,999	$2,000-$2,999	$3,000-$4,999	$5,000 & over
Dairy products:							
Fluid milk	116.0	205.8	264.8	265.9	285.0	305.5	354.9
Cheese	5.3	6.1	7.1	8.6	9.7	10.4	11.4
Cream	0.8	1.9	5.1	8.2	12.1	18.8	31.9
Ice cream	2.4	7.2	11.4	15.3	19.1	22.8	34.6
Evaporated and other	14.7	23.7	21.1	19.8	17.2	13.1	10.8
Potatoes and sweet potatoes	85.9	117.9	117.1	118.6	117.7	113.5	124.2
Dry beans and peas, and nuts:							
Dried vegetables	13.9	12.3	9.9	8.1	6.6	5.2	4.1
Nuts	0.2	2.7	4.0	4.3	4.8	5.5	9.6
Tomatoes and citrus fruit:							
Fresh tomatoes	5.6	12.4	15.3	17.9	20.1	22.6	27.9
Canned tomatoes and citrus	7.8	11.2	14.2	16.3	19.1	22.1	29.1
Fresh citrus fruit	12.2	32.2	48.0	62.5	77.5	96.6	136.0
Leafy green and yellow vegetables:							
Fresh	33.0	46.1	54.7	63.9	71.2	78.9	97.2
Canned	6.0	10.4	12.4	13.7	14.9	16.2	20.2
Other vegetables and fruit:							
Other fresh vegetables	35.4	41.1	49.6	61.6	66.4	79.2	104.2
Other canned vegetables	7.6	17.3	19.9	20.3	20.3	19.1	19.8
Other fresh fruit	41.7	70.3	91.9	111.8	131.3	159.5	247.8
Canned fruit	12.0	16.9	23.7	27.6	33.0	39.1	49.2
Dried fruit	1.8	3.2	4.2	4.3	4.7	4.9	5.7
Eggs	22.1	32.0	35.3	37.6	39.4	40.3	45.8
Meat, poultry, and fish:							
Beef	24.4	42.1	47.9	53.8	57.4	60.8	74.2
Veal	4.1	4.9	6.9	8.1	9.7	11.3	14.0
Lamb and mutton	0.8	2.3	3.8	5.6	8.1	11.5	23.1
Pork (lean)	19.9	29.4	36.9	40.1	44.4	47.3	54.7
Poultry	6.4	10.3	13.8	17.8	23.5	35.6	68.7
Other meats	7.4	14.4	14.8	14.5	13.8	11.4	10.8
Sea food	10.8	10.8	11.4	13.0	13.1	14.8	19.9
Flour and cereals:							
Bread	32.1	76.6	84.5	87.8	87.3	82.9	97.6
White flour	133.8	72.6	52.3	45.8	44.4	41.8	46.7
Other baked	6.0	10.6	15.5	18.2	19.0	19.8	28.6
Other cereal products	121.0	65.4	59.3	57.0	58.7	58.1	65.8
Butter and other fats:							
Butter	7.2	12.1	13.8	15.4	16.6	17.7	20.6
Bacon and salt side	23.1	15.4	15.4	16.2	16.8	17.6	20.2
Other fats and oils	36.2	32.3	29.9	28.6	27.9	27.8	32.6
Sugar and other sweets:							
Sugar	54.2	59.7	61.3	60.3	61.7	62.1	66.9
Other sweets	39.5	30.6	34.5	34.1	35.0	35.2	54.3
Total, all foods above †	951.3	1160.2	1311.7	1402.6	1507.5	1629.0	2063.1

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* W. W. Cochrane, *High Level Food Consumption in the United States*, USDA Misc Pub. 581, p. 46, 1945.

† Totals added by author.

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